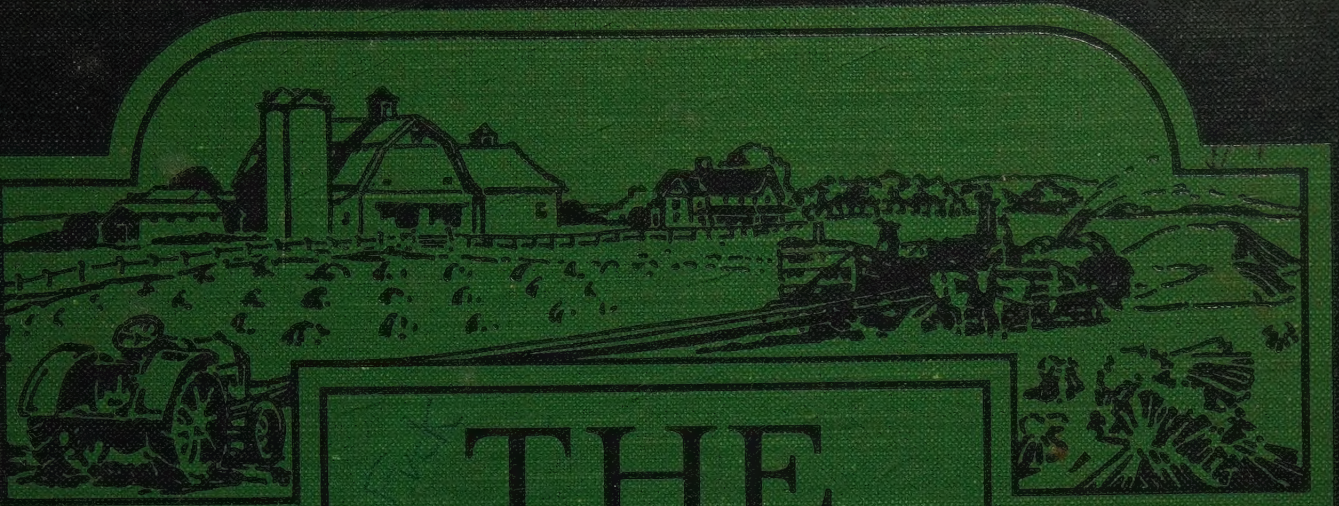




THE AMERICAS



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PARADISE VALLEY AND NISQUALLY GLACIER, MOUNT RAINIER NATIONAL PARK

After a photograph. From a water-color by Sears Gallagher

THE EARTH AND ITS PEOPLE • BOOK TWO

THE AMERICAS

BY

WALLACE W. ATWOOD

AND

HELEN GOSS THOMAS



GINN AND COMPANY

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FOREWORD TO THE TEACHER

"The Americas" follows "Home Life in Far-away Lands" as the second book of a new series of geographies on the single-cycle plan. It covers the study of North America and South America by regions and countries, and its major purpose is to lead children to discover how conditions of geographic environment influence the lives and work of the people of the Western Hemisphere.

In every problem of human geography there are two factors of equal importance: the people and the place. To understand the activities of any group of people, a clear picture of the place in which they live is essential. Hence the basic framework of this book is regional, and the maps, pictures, and text combine to visualize for children the natural regions which form the stage setting for the activities of the people of the two Americas.

The division of the lands into natural regions may be based on any one of several geographic factors, depending on the nature of the study to be pursued and the age and background of the students. The factor used in this book is the surface of the land because it is the simplest and the most easily visualized by children. Four simple types of natural regions suffice to classify land surfaces in a broad way: young, rugged mountains; old, worn-down mountains; uplands and plateaus; lowlands and interior plains. Each type has its distinctive characteristics, and each exerts certain well-defined influences on the activities of people.

One of the greatest advantages in this regional classification is that it lends itself to consistent use throughout the world, and makes possible the effective use of correlated study. Throughout the book similar regions are care-

fully correlated, and pupils are called upon constantly to apply knowledge in hand to the solution of new problems. For example, the pupil is led to see that the Pampa of Argentina has many characteristics in common with the prairies of the United States. Armed with that knowledge, his study of the Pampa rises above the merely factual and becomes a matter of interpretative thinking.

The value of the regional background cannot be too strongly stressed. It provides the "why" for the "what," and makes geography a series of stimulating problems in cause-and-effect relationships. It offers unlimited opportunity for the discussion of thought-provoking questions such as "Why are the Central Plains of the United States more densely populated than the Rocky Mountains?" or "Why do the people of New England do more manufacturing than farming?" A ten-minute discussion of this kind will do more to fix facts permanently in mind than an hour of old-fashioned book study.

The use of the regional method by no means implies the neglect of political divisions. Each group of states of the United States and each country of the Americas receives due attention, and each one is illuminated by projection against a vivid regional background.

The book is divided into convenient units of study, each of which is introduced by a motivated approach which challenges the interest of the pupil and gives him an objective toward which to work. The motivation takes a variety of forms according to the subject matter of the study units. Many of the approaches present problems for solution, and many call for some form of self-activity on the part of the pupil.

Each study unit closes with exercises or tests which enable the pupil to prove his knowledge of the important geographic facts and relationships which he has discovered. Much time and thought have been given to making the tests varied and interesting, and many suggestions are offered for extra work for pupils who work faster than the average of the class.

The maps in the book provide the pupil with a rich field for the discovery of facts of physical, economic, and political geography. Each study unit calls for thoughtful map-reading, and throughout the book map work and text study are intimately interwoven. One of the most valuable features of the maps is the showing of product data against the regional background, whereby the pupil is constantly reminded of the association of certain kinds of economic activity with certain types of regions.

In order to save the time ordinarily wasted by pupils in hunting blindly for places on maps, every map in this book is indexed in atlas style, and wherever in the text the pupil is directed to locate a place on the map, the index is given.

Every picture in the book has been selected for the purpose of playing a definite rôle in the visualization of the lesson units, and every one is an integral part of the plan of study. The pictures are provided with legends which include descriptions, explanations, and questions, and which greatly increase their usefulness. Picture-reading should be as much a part of the day's work as map-reading and text study, and should never be neglected.

The vocabulary has been checked by a graded word list prepared by Dr. B. R. Buck-

ingham and Dr. E. W. Dolch. This graded word list contains about 20,000 entries. In making it fifteen published and unpublished vocabulary studies were combined and then supplemented by original material secured from more than 16,000 children. The returns from this independent investigation were used to fill in the many gaps which were evident even after the fifteen previous studies had been combined. Finally, the graded word list was organized on the basis of meanings rather than on the basis of word forms. Not infrequently one meaning of a given word was found to be suitable for a primary grade, while another meaning of the same word might belong to a much higher grade.

A comparison of the text of "The Americas" with this graded word list gives assurance that its vocabulary is well within the grasp of the pupils for whom the book is intended. Whenever words likely to be new to pupils are introduced they are explained, and avoidance of reading difficulties leaves the pupils free to give their undivided attention to the subject matter.

The authors are indebted to Dr. Oliver E. Baker, Senior Agricultural Economist of the United States Department of Agriculture, for invaluable criticism of the parts of the text dealing with agriculture in North America, and to Miss Prudence Cutright, Director of Instructional Research for the Board of Education of Minneapolis, for assistance in preparing the tests and exercises. To the many others also who have contributed in one way and another to the making of this book the authors wish to express their sincere gratitude.

WALLACE W. ATWOOD
HELEN GOSS THOMAS

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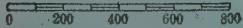
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NORTH AMERICA

Scale of miles



- Water less than 500 ft. deep
- Floating ice
- Ice caps and snow fields
- Tundra
- Grasslands and cultivated areas
- Temperate forests
- Tropical forests
- Semideserts, deserts, and barren mountain slopes

THE AMERICAS

HOW THE NEW WORLD WAS DISCOVERED AND SETTLED

AN INTRODUCTION TO THIS BOOK

The great discovery. Is the twelfth of October a holiday in your state? If it is, you know what we celebrate on that day. If it is not, perhaps you can guess what it stands for when you know that we call it Columbus Day. It was on October 12, in the year 1492, that Christopher Columbus discovered America.

When Columbus started on his voyage across the Atlantic Ocean from Europe, he hoped to reach a part of Asia known as the Indies. Day after day his three little ships sailed westward, leaving Europe farther and farther behind. At last, after five weeks, they came in sight of an island. When Columbus and his men went ashore, they were met by strange people whose skin was reddish brown. Never before had the white men seen or heard of any people of the red race. Columbus soon found other islands, and on each one he saw more of the red-skinned people. Believing that he had reached the Indies, he called the people Indians.

Columbus was mistaken. The islands which he had found were between North America and South America, and Asia was thousands of miles away. But the name that he gave to the native people of the New World was never changed. To this day they are called Indians.

When Columbus returned to Europe and told of his discoveries, everyone believed that he had reached the Indies, and for many years

no one suspected his mistake. Columbus himself made three more voyages, but he never knew that he had discovered the New World.

Turn to the map on pages 304-305, and trace the voyages of Columbus to America. What do we now call the islands which he discovered?

Explorers and settlers. After the voyages of Columbus many other Europeans sailed westward to explore the new-found lands. It was a long time, however, before anybody knew that there were two great continents on the western side of the Atlantic Ocean, and that they were separated from Asia by the broad Pacific Ocean.

As time went on, people from Europe came to settle, or make their homes, in the New World. Wherever they went they found tribes of Indians. Some of the tribes were friendly, and welcomed the white people. Others were unfriendly, and tried to drive the settlers away.

How the Indians lived. The Indians of the West Indies and other warm, rainy parts of the New World lived in huts of wood and grass, and wore very few clothes. They had little gardens where they raised vegetables and fruit, and they also obtained food by hunting and fishing.

Farther north, where the hot summers are followed by cold winters, the Indians lived quite differently. Many of the northern tribes were fierce and warlike. They wandered



Habitat Group

Courtesy of the New York State Museum

Figure 1. An Indian family of long ago. Their house is made of poles and elm bark. The father is carrying a young deer which he has shot in the forest. The mother is scraping the hair from a deerskin for clothing.

The daughter is cutting up venison, or deer meat. What are the two sons doing? Hanging at the left are black bearskins for winter blankets, and at the right are strips of venison which are being dried for winter food.

through the thick forests and over the grassy plains, getting their living chiefly by hunting wild animals. They quarreled over the hunting grounds, and were often at war with one another. Some of them added to their food supply by fishing or gathering berries. Others carried on farming in a simple way, raising a little corn and a few vegetables each summer.

Figure 1 is a picture of an Indian family of long ago. They lived in what is now the state of New York, in the northeastern part of the United States. After you have studied the picture, tell all you can of the ways in which these Indians got their food, their clothing, and the materials for building their houses.

How the Indians lost their lands. Little by little the Indians were conquered by the white men, and their lands were divided into colonies belonging to different countries of Europe. As the colonies grew larger and stronger most of them won their freedom, and

became independent, or separate, countries. Today Canada is the only large part of the Americas which has not separated from the mother country in Europe. There are still many Indians in the New World, but they have no countries of their own.

Some things to do. 1. Find out the names of the Indian tribes who lived in your state before the coming of the white men. 2. Make a list of places in your state which have Indian names.

Special credit work. This work is for pupils who get their lessons quickly, or who wish to spend extra time on their study of geography.

The pupils who write the best reports on these two topics may read them to the class.

1. Find out all you can about the way in which the Indians lived in your state before the coming of the white men.

2. Find out if there are any Indian tribes living in your state today and, if so, where and how they live.



© by Hileman; courtesy of the Great Northern Railway

Figure 2. St. Mary Lake in Glacier National Park. This park is in the Rocky Mountains. Notice that the slopes of the mountains are steep and that the peaks

are sharp. What do you see on the upper slopes that reminds you of the Alps in Switzerland? From the name of the park, what do you expect to see there?

THE UNITED STATES

I. THE LAND THAT IS OURS

Foreword. In 1790, the year after George Washington became the first president of the United States, our country was made up of thirteen states on the Atlantic coast of North America. Today it has forty-eight states, and it stretches all the way across the continent. In less than 150 years it has grown to be one of the largest and richest countries of the world. As you study its geography, you will learn many of the reasons for its growth.

First of all, you will find that the United States is made up of many different *natural regions*. As you study the next few pages, you will learn what the natural regions are, and how they differ from one another.

1. THE MOUNTAINS OF OUR COUNTRY

Some of the natural regions of our country are mountainous lands. You may have thought that all mountains are much alike, but as you read this section you will find that the mountains in the eastern part of the United States are different in many ways from those in the western part.

Playgrounds in the western mountains. During your study of *Home Life in Far-Away Lands* you learned about Switzerland, the little mountain country which is often called the "playground of Europe" because so many people spend their vacations there.

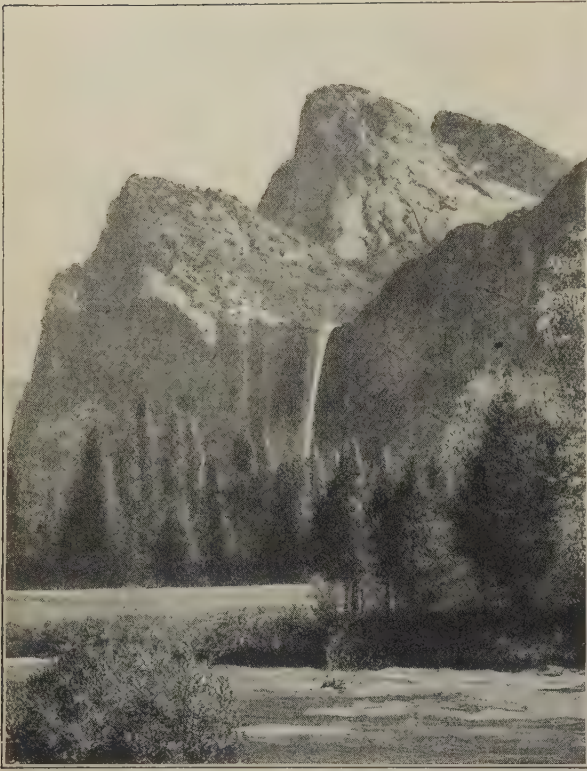
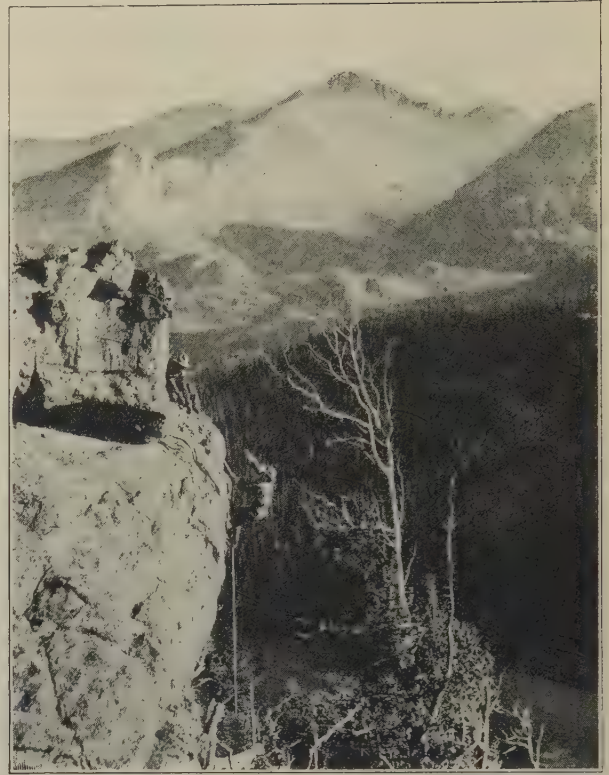


Figure 3. Bridalveil Falls in Yosemite National Park. This park is in the mountains known as the Sierra Nevada. The waterfall in the picture tumbles over a cliff nearly an eighth of a mile high. Of what countries in Europe does it remind you?

The frontispiece in this book and Figures 2, 3, and 4 are pictures of playgrounds in the United States. Every summer thousands of people visit these beautiful places to rest, to enjoy the scenery, and to camp and climb among the mountains. Study the pictures carefully. What things do you see in them that make you think of the "playground of Europe"?

The legends under the pictures tell you the names of these playgrounds and where they are located. You will notice that all of them are called *national parks*. That means that they are parks belonging to the whole nation, or all the people of the United States. Our government takes care of them, and they are free for everyone to enjoy. All four are in mountains in the western part of our country.



Denver Tourist Bureau

Figure 4. Climbing a steep cliff in Rocky Mountain National Park in the southern section of the Rocky Mountains. Notice that the lower slopes of the mountains are covered with trees. Can you explain why the upper slopes are bare and rocky?

Turn to the map of the United States on pages 10–11, and find the Rocky Mountains. You will see that they are divided into two parts, or sections. Glacier National Park is in the northern section. Rocky Mountain National Park is in the southern section. Find both parks on the map.

Now find Yosemite National Park in the Sierra Nevada. These mountains are nearer the Pacific Ocean than the Rocky Mountains are. The white men who discovered the Sierra Nevada were Spaniards, or people who came from Spain. Since they spoke the Spanish language, they gave the mountains a Spanish name. *Sierra* means "a range of mountains," and *nevada* means "snowy." Find another national park, besides Yosemite, in these "snowy mountains."

Move your finger northward from the Sierra Nevada along the Cascade Range. Find Mount Rainier and another national park in this range of mountains. Look up the word *cascade* in the dictionary, and tell what the name of the range means.

Young, rugged mountains. The pictures show that these mountains in the western part of our country are high, with steep sides and sharp peaks. They have thick forests on their lower slopes, but many of them are so high that their upper slopes are too cold for trees and their peaks are bare rock. Some are so high that their tops are always covered with snow, and some, like Mount Rainier, have glaciers moving slowly down their slopes.

From the lower lands which border them the mountains look so high and steep that it seems as if the only way to travel through them would be on foot or on horseback. Yet railroads and automobile roads wind up and down the slopes, and cross the ranges through passes among the peaks. In places where the grades are steepest, the trains need special engines to pull them up the mountain sides, and even high-powered automobiles have to run in low speed. See Figure 5.

Turn to the map on pages 10-11 again. Notice that the Rocky Mountains, the Sierra Nevada, and the Cascade Range are colored darkest brown. Find other natural regions, or divisions of the land, which are colored the same. In the lower left corner of the map find a little block of this color. Read what is printed beside it, and tell what the color stands for. This means that all divisions of the land which are colored darkest brown on the map are mountains, and, also, that they are a *special kind* of mountains. It is because they are so rugged, or rough, that we call them *rugged mountains*. You will soon learn why we also call them *young mountains*.

Perhaps you have already guessed that these are the *same kind* of mountains that we



Denver & Rio Grande Western Railroad

Figure 5. A train passing through a deep, steep-walled valley, or *canyon*, in the Rocky Mountains. It is drawn by an especially powerful engine. Why is it hard to build railroads in the mountains?

saw in Switzerland. Do you remember the beautiful scenery there, and the pure, healthful mountain air? Many parts of our own rugged mountains are just as beautiful as the Alps, and the air is just as good for people's health. That is the reason why they are such wonderful vacation lands, and why there are so many national parks among them.

It would be wrong, however, to think that our western mountains are nothing but vacation lands, for thousands of people live and work there all the time. Of course there are very few people in the highest and roughest parts, although there are mining centers high in the mountains where gold, silver, copper, and other useful metals are taken from the earth. In the valleys, where the land is lower and more nearly level, there are cities, towns, and farms. Later we shall learn of other ways, besides farming and mining, in which the people of the western mountains get their living.



Figure 6. Cows grazing in a pasture in the Green Mountains. The Green Mountains form one of the ranges in the northern part of the Appalachian Moun-

Old, worn-down mountains. Figures 6 and 7 are pictures taken in the Appalachian Mountains of the United States. Study the pictures and their legends. Then trace the Appalachian Mountains from north to south on the map on pages 10–11. In what part of the United States are they?

The pictures show that these mountains of the East are different from the mountains of the West. Their slopes are not so steep, and instead of sharp peaks they have rounded tops. They are lower too, — so much lower that there are trees on their upper slopes, and even on the summits, or very tops, of all but the highest ones. There are no glaciers moving down their sides, and no snow on their tops in summer.

Turn to the map on pages 10–11 again. Notice that the Appalachian Mountains are colored a lighter shade of brown than are the rugged mountains of the West. That means that they are a different kind of moun-

tains. Notice that the mountain slopes here are not so steep as those in the West. On the map on pages 10–11 find the region where this picture was taken.

The explanation in the lower left corner of the map shows that this lighter brown stands for *old, worn-down mountains*. Perhaps it seems strange to you to call some mountains young and others old, like people. Yet one of the principal reasons why the mountains of the East are so different from the mountains of the West is that they are much older.

No one ever saw the Appalachian Mountains when they were young, for there were no people living on the earth so long ago as that. But we know that they were much higher than they are now, — perhaps higher than any mountains in the world today, — and that their slopes were steep and their peaks sharp and jagged. In the many, many years that have passed, they have been *worn down* to their present height and shape.

We know how these changes came about, for we can see the same thing going on in all the mountains of the world today. Rain,



Courtesy of the U.S. Forest Service

Figure 7. A valley in the Blue Ridge Mountains in Virginia. The Blue Ridge is one of the ranges in the southern part of the Appalachian Mountains. Notice

that the mountain peaks are not very sharp, and that they are covered with trees. What do the forested summits suggest about the height of the mountains?

frost, and ice loosen and break up the rocks on the summits and slopes, and streams wash much of the loose rock material down the mountain sides. Little by little, as the rock material is carried away, the peaks are lowered, and the slopes become less and less steep. Where there are glaciers, they too help to wear down the mountains. These changes happen very, very slowly, but they are going on all the time.

Because the Appalachian Mountains are so old they are much lower than they once were, and very different in shape. The mountains of the West are much younger, and there has not been time for them to be lowered so much. That is the reason they are still very high, very steep, and very rugged.

Compare the pictures of the Appalachian Mountains with the pictures of the mountains of the West. In which do you think it is easier to build roads and railroads, — young, rugged mountains, or old, worn-down

mountains? In which do you think more of the land can be used for farming? Give good reasons for your answers.

If you have answered the questions thoughtfully, you will not be surprised to learn that more people make their homes in the Appalachian Mountains than in the mountains of the West. Because the slopes are gentler and the valleys broader, more roads and railroads have been built in the eastern mountains, more of the land there is used for farms, and more people make their homes there.

Some choices to make. From the list of phrases below choose those which describe the mountains in the western part of the United States. Then tell what mountains in our country the remaining phrases describe.

high mountains
young mountains
lower mountains
old mountains
worn-down mountains

rugged mountains
rounded peaks
sharp peaks
steep slopes
more gentle slopes



U.S. Department of Agriculture

Figure 8. A view of the Central Plains in Iowa. Notice that the land is not flat, but that it is level enough to make farming easy. Wherever the surface of the

land looks like this we say that it is "gently rolling." What do the trees in the picture suggest to you about the amount of rain that falls in the Central Plains?

2. GLIMPSES OF THE PLAINS

Although some farming is carried on in all the natural regions of our country, the best farm lands are in the *lowlands and interior plains*. These regions are so large that they make the United States one of the great farming countries of the world. As you read about them, try to discover two reasons which help to explain why they are so well suited to farming.

The interior plains. On the map on pages 10-11 the lowlands and interior plains are colored green. Find the two great regions of plains between the Rocky Mountains and the Appalachian Mountains. These are called the *interior plains* of the United States because they are inland, or far from the sea. What is the eastern section of these plains called? What is the western section called?

Study Figures 8 and 9, and tell what differences you see between the surface of the plains and the surface of the mountainous regions. Why are the plains so much better suited to farming? How are the farmers using the land in Figure 8? in Figure 9?

You can see from the pictures that the surface of the land in both the Central Plains and the Great Plains is mostly level or gently rolling. Parts of the Great Plains are as flat as a table top. The Central Plains are not quite so flat, but compared with the mountains they are level lands. Judging from the surface alone, you might think that the Great Plains are even better suited to farming than the Central Plains are. But there is something about the Great Plains that makes them less useful than the Central Plains for raising crops. That something is a smaller amount of rainfall.

The Central Plains are well watered. Except in the westernmost part, they receive enough rainfall for the growth of trees, and long ago the eastern part was covered with forests. Now much of the land has been cleared of trees and turned into farms, but there are still many scattered woodlands. The Great Plains are different. They are chiefly grasslands, for they get too little rain for the growth of trees.



U. S. Department of Agriculture

Figure 9. Cattle grazing on the Great Plains in Texas. Notice how flat the land is. Can you think why there are no trees? Water for the cattle to drink is pumped

from beneath the ground, often by windmills such as you see in the picture. Explain why the Great Plains are not so well suited to farming as the Central Plains.

Lands that are too dry for trees are too dry for many kinds of crops. But if they have enough rainfall for the growth of grass, they make good grazing lands, which means that cattle, sheep, and other animals can feed, or graze, on them. As you have learned from Figure 9, grazing is one of the important uses of the Great Plains. Later you will learn of special crops which are raised in some parts of these plains, and of special ways in which farming can be carried on in spite of the little rainfall. In the drier parts of the Great Plains, however, more of the land is used for grazing than for raising crops.

The Central Plains are more thickly settled than the Great Plains, chiefly because they are better farm lands and therefore more people can get their living there. In this region are some of the largest cities of our country. The cities started as small trading towns, when there were only a few farmers in the plains. Today these places are wealthy business centers, where the people of the surrounding farm lands sell their crops and buy the things

they need. They are also great manufacturing centers, sending the products of their mills and factories to all parts of the United States and to distant parts of the world.

The coastal plains. Turn to the map on pages 10-11, and find the Gulf Coastal Plain and the Atlantic Coastal Plain. What bodies of water do they border? We call these lowlands *coastal plains* because they are plains bordering the seacoast. They receive even more rainfall than the Central Plains do, and were once covered with thick forests. Because so much of the land is level and well watered, part of it has been cleared of trees, and is now used for farms. Yet there are valuable forests left, which help to supply wood to other parts of the country.

Like the Central Plains, the coastal plains are so well suited to farming that many people can get their living there. The best sections are thickly settled and have large cities which are centers of business and manufacturing. Some of the most important cities are seaports on the Gulf of Mexico and the Atlantic Ocean.





Sentences to complete. Complete the following sentences by giving the right words to fill the blank spaces. If you need to, you may use the map on pages 10–11 as a help.

1. The two sections of the interior plains of the United States are the ----- and the -----.

2. Of these two, the ----- are better for farming because they have more -----.

3. Parts of the Great Plains are better for ----- than for farming because they have so little -----.

4. The plain bordering the Atlantic Ocean is called the -----.

5. The plain bordering the Gulf of Mexico is called the -----.

6. Like the Central Plains, the coastal plains are well suited to farming because their surface is ----- and they have plenty of -----.

3. THE UPLANDS AND PLATEAUS

So far you have located on the map the more important regions of mountains and plains in the United States. Besides these regions there are others which are not so level as the plains, but not so rough as the mountains. Since they are neither rugged enough to be called mountains nor level enough to be called plains, we give them a special name: *uplands and plateaus*.

Uplands of the East. Turn again to the map on pages 10–11. The parts of the United States which are uplands and plateaus are shown in the lightest shade of brown. Point to the two largest regions of this kind in the eastern part of the country. Which of them is on the eastern side of the Appalachian Mountains? Which is on the western side?

Figure 10 is a picture taken in the upland known as the Piedmont Belt. Study the picture and its legend. The word *piedmont* means "at the foot of the mountain," and the map shows that the Piedmont Belt is true to its name. It lies at the foot of the Appalachian Mountains, between them and the

Atlantic Coastal Plain. The picture shows that the Piedmont Belt is a rather hilly upland. It is higher and more hilly than the Coastal Plain, but lower and less rough than the mountains. Which do you think has the better surface for farming, — the Piedmont Belt or the Appalachian Mountains? the Piedmont Belt or the Coastal Plain? Give good reasons for your answers.

Figure 11 is a picture taken in the Appalachian Plateau. Study the picture and its legend. The map shows that this plateau is on the western side of the Appalachian Mountains, between them and the Central Plains. Like the Piedmont Belt, it is mostly a hilly upland.

When you were studying *Home Life in Far-Away Lands*, you visited an Indian boy whose home is on a plateau in South America. At that time you learned that a plateau is a *high plain*. Remembering that, do you not wonder why this hilly region west of the Appalachian Mountains is called the Appalachian Plateau?

Its story is somewhat like the story of the old, worn-down mountains. Long, long ago it was a high plain with an almost level surface. Ever since that time streams have been wearing it down, and, by cutting deep valleys in it, have changed it into a hilly region. In this way the appearance of most of the plateau has changed completely, and instead of being a high plain, it is now a hilly upland.

Both the Appalachian Plateau and the Piedmont Belt are better suited to farming than are the mountains which lie between them, and both are more thickly settled than most parts of the mountains. You might think that they would have fewer people than the bordering plains, but this is not so. The northern portions of these two uplands are great manufacturing sections with many cities and towns. Later we shall learn why manufacturing has become so important here.



Figure 10. Cows grazing in a pasture in the Piedmont Belt in Pennsylvania. How should you describe the surface of the land here? In what other way do you

think the farmer who owns the pasture might use his land? What do the trees suggest to you about the amount of rain that falls each year in this region?



Figure 11. A view in the Appalachian Plateau in Kentucky. Point to some land that has been cleared of trees and is used for farming. Why do you think

the wooded hills at the left have not been cleared for farming? How does the surface of the land in this region differ from the surface in the Central Plains?

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U.S. Department of Agriculture

Figure 12. A great wheat farm in the Columbia Plateau in the state of Washington. In what way is this region well suited to farming? Can you explain why there are no trees here?

Plateaus of the West. Figures 12 and 13 are pictures of two plateaus in the western part of our country. What are they called? How does their surface differ from the surface of the eastern uplands? Judging from the pictures, do you think they receive much rainfall? Give at least one good reason for your answer.

Turn to the map on pages 10–11, and find the Columbia Plateau. What mountains border it on the east? on the west? Point to some mountains in the midst of it. Find the Colorado Plateau. What mountains border it on the northeast? on the southwest? Point to some small mountain ranges within it.

Lying between these two plateaus is a third one called the Great Basin. Find it on the map. In traveling across this basin, should you expect to see some mountain ranges? How do you know that? What do you find on the map which would lead you to think that parts of the basin, at least, are very dry? Study Figure 14 and its legend. Does it give you the same idea of the Great

Basin that the map gave you? Explain your answer.

The map shows that these plateaus form a large division of land lying between the Rocky Mountains and the other great ranges of rugged mountains farther west. They are lower than the surrounding mountains, but much higher than the lowlands and interior plains. The pictures show that they are more nearly level than the uplands of the East. They are not so level as the plains, however; for they have many small ranges of mountains within

their borders. On the map these plateaus are shown in the lightest shade of brown, because, like the eastern uplands, they are neither rough enough to be shown as mountainous lands, nor level enough to be shown as plains.

After studying the map and the pictures, you will probably not be surprised to learn that of all the large divisions of land in the United States, the plateaus of the West have the fewest people. There is plenty of level land for farming, but, as you have already learned, much of it is too dry for crops, and

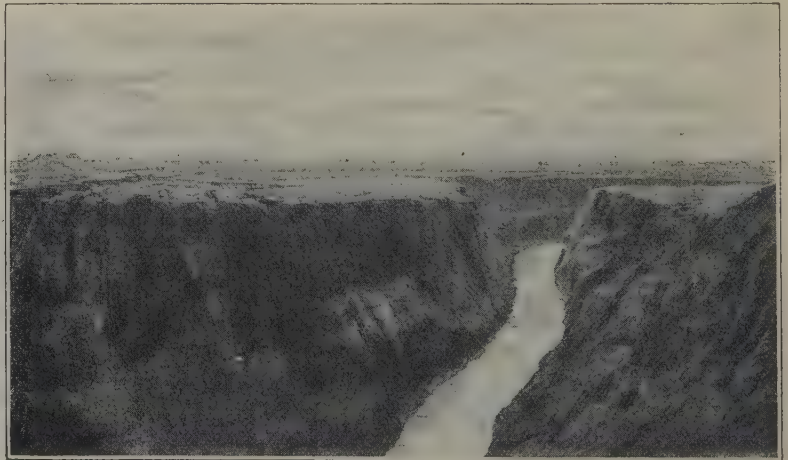


Figure 13. Part of the canyon of the Colorado River in the Colorado Plateau in Arizona. How should you describe the surface of the plateau? Why do you suppose there are no trees or farms here?

can be used only for the raising of live stock such as cattle and sheep. Parts of the Great Basin and of the Colorado Plateau have too little water and grass even for grazing. These parts are deserts.

As in the Great Plains, there are some parts of the plateaus which have just enough rain for certain crops, and other parts where the people have found special ways to carry on farming in spite of the little rainfall. In these parts there are cities and towns, some of which are large business centers. There are other cities and towns which are mining centers, much like those of the Rocky Mountains. On the whole, however, the western plateaus are hard places for people to get a living. That is the reason they are less thickly settled than any other large division of the United States.

Something to do. From the pictures on pages 13, 14, and 15 make a list of the five most important regions of uplands and plateaus in the United States. Then write opposite the name of each one either the word *East* or the word *West*, to tell the part of the United States in which it is located. When you have finished, check your list by the map on pages 10–11 to see if you have given the location of each region correctly.

Some map discoveries. So far you have located on the map the larger natural regions of the United States. Now locate and name the smaller regions described below.

1. A region of highlands between the Central Plains and the Gulf Coastal Plain.

2. A small group of young, rugged mountains in the midst of the Great Plains.

3. The plateau region between the two sections of the Rocky Mountains.

4. A lowland west of the Sierra Nevada.

5. A lowland west of the Cascade Range.



Figure 14. A view in the Great Basin in Nevada. What kind of land do you see in the distance? How does the rest of the land in the picture look? The bushes in the picture are sagebrush, a kind of plant that can grow in very dry places.

4. NATURAL REGIONS AND POLITICAL DIVISIONS

You have been learning about nature's divisions of our country. The people have made quite different divisions. Do you know what they are, and how they differ from the natural regions?

Nature's divisions of the land. The pictures which you have been studying show that there are great differences in the *landscape*, or shape and appearance of the land, in different parts of the United States. If you should travel across the country, from one coast to the other, you would pass through the natural regions which you have located on the map. We call them natural regions because they are nature's divisions of the land. Nature, not man, has shaped their surfaces and made them different from one another.

The natural regions differ also in *climate* as well as surface. By climate we mean the kind of weather that a region has during the year. As you know, the surface and climate of a region have much to do with the way in which the people live and the kinds of work that they do.

The divisions made by the people. You know that our country is divided into forty-eight states. We often speak of the states as *political divisions*, which means divisions made by the people. How, then, are they different from the natural regions?

The *boundaries*, or dividing lines, between the states are marked in purple on the map on pages 198–199. Turn to that map, and find your own state. Run your finger along its boundaries. Does your state lie wholly in one natural region? If so, what region is it? If not, what regions does your state share with the bordering states?

If a man wishes to show the boundary between his land and his neighbor's, he builds a wall or a fence, or plants a hedge to mark it. Our states are much too large to have their boundaries marked in any such way. The boundary lines are drawn on maps so that we may know where they are, but they are not real lines on the land itself.

On many of the roads and railroads which cross the state boundaries there are signposts to show travelers the points where they leave one state and enter the next, but there are no long fences or walls to mark the dividing lines.

Turn to the map on pages 198–199 again, and see if any part of the boundary of your state follows the course of a river. If so, what river is it? If not, find some state boundary which does follow a river. You will find many of them, especially in the eastern part of our country. Notice how crooked they are in comparison with the boundaries which do not follow rivers.

The regions and the states. You have learned that the natural regions of our country are nature's divisions of the land. The states are man's divisions, and you have seen from the map that they are quite different from the natural regions.

Since men have drawn the boundaries of the political divisions, they can change them

if they wish. But men cannot change the natural regions. The mountains, the plains, and the uplands and plateaus are as nature made them, and they will remain the same, no matter what changes men may make in the political divisions.

The life and work of the people in each state of our country depend largely on the natural region or regions in which the state is located. Therefore, in studying each group of states, we shall first find its boundaries on the regional map. Then, when we know what its natural regions are, we shall be able to understand how the people live and work, and why they live and work as they do.

A map to make. On page 316 you will find an outline map of the natural regions of the United States. Trace this map carefully on a clean sheet of paper. Then color the natural regions lightly in the colors used on the map on pages 10–11. Keep this map in a safe place. You will use it several times during your study of the United States.

Flying across the United States. Turn to the map on pages 10–11, and find the line of 40° North Latitude. Imagine that you are Colonel Lindbergh, and that you are to fly in an airplane from east to west across the United States along that line. Below is a list of the natural regions that you will cross on the trip. Arrange them in the order in which you will fly over them. You may use the map as a help.

Appalachian Mountains	Great Basin
Appalachian Plateau	Great Plains
Atlantic Coastal Plain	Piedmont Belt
Central Plains	Rocky Mountains
Coast Ranges	Sierra Nevada
Colorado Plateau	Valley of California

Special credit work. From magazines, newspapers, and railroad folders make a collection of pictures of the national parks of the United States. Each pupil who does this work may ask the teacher to select from his collection pictures for a schoolroom exhibit. Invite the pupils of some other class to see the exhibit.



Courtesy of Manchester Chamber of Commerce

Figure 15. Manchester, New Hampshire, in the Coastal Hilly Belt of New England. Manchester is a manufacturing city on the Merrimack River. Judging from

what you see of the Hilly Belt in the picture, do you think the surface of this region of New England is the best kind for farming? Give a reason for your answer.

II. THE NEW ENGLAND STATES

Foreword. In the year 1620 a little group of men, women, and children left their homes in the Old World and sailed across the Atlantic Ocean to settle in the New World. After a long, stormy voyage they reached the shores of North America. These people were the Pilgrims. For their new home they chose a place on the coast of what is now the state of Massachusetts, and named it Plymouth. What have you learned about the Pilgrims in your history lessons?

Soon other settlers came to make their homes in this part of America. The first settlements were along the coast, for the land was covered with forests and there were no roads. Little by little, however, the people moved inland along the rivers and made settlements farther from the sea.

The Old World country from which the settlers came was England, and so the part of the New World which they settled came to be called New England. Today this part of our country is divided into six states. Find the New England States on the map on page 315. Then work out the map studies on page 20.

1. THE EARLY SETTLERS AND THEIR WORK

New England was not an easy place for the settlers to get their living, and from the very first they had to work hard to supply their needs. This section will tell you how they used both the land and the sea, and how, little by little, they changed New England from a wilderness of forests into a land of farms, villages, and towns.

Working for shelter and food. The first needs of the settlers were houses and food. They had no trouble finding building material, for the forests were all round them. The first thing they did was to cut down trees and help one another to build houses.

Getting food was a harder problem, for before the settlers could plant crops they had to clear the land. This meant cutting down the trees and clearing away bushes, rocks, and boulders. It was slow, hard work, and even after it was done the settlers did not find New England an easy place to carry on farming. Figure 15 and the map will help you to understand the reasons for this. After you have studied the picture, turn to page 25 and work out the map studies in Group I.



Figure 16. A map showing the part of North America once covered by the great ice sheets. It was the Labrador ice sheet that moved southward over New England.



Courtesy of U. S. Geological Survey

Figure 17. Stone walls on a New England farm. Wherever you travel in New England, you will see fields and pastures fenced with walls built of rocks and boulders which were left lying on the ground when the great ice sheet of long ago melted away.

Why farming is hard in New England. The map shows clearly that most of New England is hilly or mountainous. Bordering the coast is the upland known as the Coastal Hilly Belt. Farther west are the White Mountains, the Green Mountains, and other ranges of the Northern Appalachians. The highest peak in New England is Mount Washington, which rises 6293 feet above the sea. The Connecticut valley and the other lowlands are small compared with the hilly and mountainous regions. *Rough surface*, then, is one reason that farming is hard in New England.

Thin, stony soils are a second reason. In all parts of the earth there is solid rock beneath the soil. To be best for farming, soils should be deep and fairly fine. In many parts of New England the soil is thin, and much of it is coarse and stony.

Why much of New England's soil is poor. Long ago, when the climate was much colder than it is now, great sheets of ice thousands of feet thick formed in the northern part of North America. We often speak of them as *continental glaciers* because they covered so much land. One of these ice sheets spread southward over New England. It moved very,

very slowly; but as it crept along it ground off the tops of the mountains, hollowed out the valleys, and carried the loose rocks and soil along with it. *See Figure 16.*

Later the weather grew warmer, and the ice sheet began to melt. Streams of water poured from the melting ice, washing away much of the finer soil which the glacier had scraped from the land. When the glacier finally melted away and New England was uncovered again, there were some places where all the soil was gone, and only bare rock was left. In a few places the glacier left fine soils as it melted away, but over much more of the land it left only coarse sand, gravel, and boulders of all sizes. *See Figure 17.*

Now you know why so much of New England's soil is poor. You must not think, however, that all the changes made by the ice sheet harmed New England. In many places the glacier left large hollows in the ground which filled with water and became lakes and ponds. The rock material which it dropped turned many of the streams into new courses where they tumbled over steep rock ledges, forming waterfalls. Later you will learn how the waterfalls have helped New England.

How the settlers used the land. In spite of the rough surface and poor soils the people of New England became farmers. In order to have bread, milk, and meat, they raised corn, rye, and wheat and kept cattle, pigs, and sheep. The hides of the cattle that were killed for beef provided them with leather for shoes, and sheep's wool was their principal clothing material. The farmers' wives spun the wool into thread and wove it into cloth.

By doing many different kinds of work on their farms, and working hard summer and winter, the settlers were able to supply many of their needs. But the surface and soils made it hard for them to get their living by farming alone. Fortunately, they could get part of their living from the sea.

How the settlers used the sea. Turn to the map on page 24, and study the coast line of New England. Notice how irregular, or crooked, it is, and how many bays reach far into the land. A coast of this kind helps people to use the sea because the sheltered bays provide safe harbors for ships. See Figure 18.

The safe harbors of New England were a great help to the settlers, for they needed to use the sea. Finding that cod and other fish were plentiful in the waters bordering the coast, they began fishing to add to their food supply. Using wood which they cut in the forests, they soon built boats large enough to go on long fishing trips and to carry on trade with the Old World. Fishing helped trade, for the people of Europe would buy large quantities of fish. Before many years had passed, ships built in New England were carrying lumber and salted codfish to Europe and were bringing back manufactured goods and other supplies which the New Englanders could get in no other way.

Fishing and trading led to the growth of many towns on the deep, safe harbors of the New England coast. These towns were sea-ports, and each one had its own fishing boats

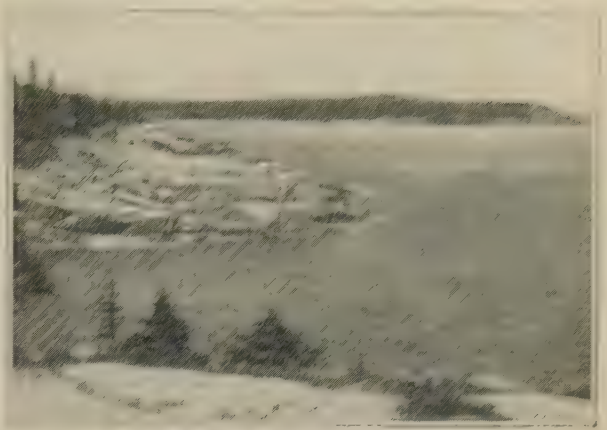


Figure 18. A glimpse of one of the many bays along the coast of Maine. Notice the rocky points of land which shelter the bay from stormy winds and waves, and help to make it a safe harbor for ships.

and trading ships. Besides the men who went to sea as sailors and fishermen, there were many others in these towns who built ships, made ropes and sails, salted fish, and did other kinds of work connected with the sea.

Map work. Take the map of the natural regions of the United States which you made yourself, and lay it over the outline map on page 315. Trace the boundaries of the New England States, using a purple pencil if you have one. If not, a common lead pencil will do. Print the abbreviation of the name of each New England state neatly on your map.

Sentences to complete. Complete the following sentences by giving the correct word to fill each blank space. The missing words are listed below.

1. New England is not an easy place to carry on farming because much of the land is ----- or -----, and much of the ----- is poor.
2. New England is well suited to work connected with the sea because there are many safe ----- along the -----.
3. The early settlers used the land for ----- and the sea for ----- and -----.

LIST OF MISSING WORDS

coast	fishing	hilly	soil
farming	harbors	mountainous	trading

2. MANUFACTURING IN NEW ENGLAND

Although work connected with the sea became very important, for many years most of the people of New England lived on farms, and more people got their living by farming than by any other kind of work. Today all this has changed. Less than one tenth of all the people of New England now live on farms. The rest live in cities, towns, and villages. Farming, fishing, and lumbering are still carried on, but *half of all the people who work are engaged in manufacturing*. This section will tell you how this great change has come about.

Some things to know about manufacturing.

Manufacturing is the changing of *raw materials* into *finished products*. For example, wool is a raw material, and woolen cloth is one of the finished products made from it. Most raw materials come from farms, forests, or mines.

Some manufacturing is done by hand, but today the greater part of it is done by machinery. Machines cannot run without some kind of *power*; so power is just as necessary as raw materials for manufacturing.

In many factories the machinery is run by *steam power* made by burning coal. The wheels of machinery may also be turned by the power of falling water, or *water power*. In *Home Life in Far-Away Lands* you learned that water power may be used to make *hydroelectric* power. Perhaps you know that electric power may also be made from steam power.

Power-driven machines are very wonderful things, but they cannot change raw materials into finished products without people to make use of them. *Workers*, therefore, are most important of all in manufacturing. They must be *skilled workers* too, trained to use the machines in the right way.

Finally, it is no use to manufacture things unless they can be sold. All manufacturers must find *markets* for their products, that is, places where there are people to buy them.

Turn over to page 22.

MAP STUDIES

1. The map on the opposite page is a *political map* of New England because it shows the states, or political divisions. Notice that the names of the states are abbreviated, or shortened. For example, instead of the full name "Maine," you find the abbreviation "Me.," which is the shortened form of the name. It is helpful to know the abbreviations of state names because they are used so often in newspapers and on letters.

2. Following is a list of the names of the New England States and their abbreviations. After you have studied the list, name the New England States *from the map*, without looking at the list.

Maine (Me.)	Massachusetts (Mass.)
New Hampshire (N.H.)	Rhode Island (R.I.)
Vermont (Vt.)	Connecticut (Conn.)

3. From now on you will need to find many places on the maps in this book. To save your time, the maps are marked with figures and letters which are guides to the location of places. For example, suppose you wish to find Plymouth, the place settled by the Pilgrims.

First find the number 7 in the eastern and western margins of the map. You will see that 7 is halfway between two lines of latitude. Now find the letter E in the northern and southern margins of the map. Notice that E is halfway between two lines of longitude.

Find the place on the map where the lines of longitude on each side of E cross the lines of latitude on each side of 7. Do you see that these four lines form an oblong-shaped block? Look in that block, and you will find Plymouth.

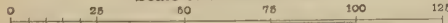
Plymouth, you see, is in the block of the map which can be called E7 because it is formed by the longitude lines on either side of E and the latitude lines on either side of 7. E7, then, is an index, or guide, by which you can find Plymouth on the map. You will soon find that it is much easier to locate places on the maps in this way than to hunt for them without any guide.

Practice finding the following cities on the map of New England:

Augusta F4	Concord D5	Montpelier C4
Boston D6	Hartford C7	Providence D7

POLITICAL MAP SHOWING RAILROADS

Scale of statute miles



- ☆ State capitals ● Chief seaports
— Principal railroads
~ Navigable rivers - Canals
■ Lowlands
■ Uplands and plateaus ■ Old, worn-down mountains
— Boundaries of natural regions

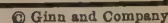




Figure 19. Woolen mills at Lawrence, on the Merrimack River. In mills such as these the wool is combed, spun into thread, and woven into all kinds of woolen and worsted goods. Can you think why there are so many mills in the Merrimack valley?

What New England manufactures. New England manufactures so many different things that it would take a whole book to tell about them. Very likely many of the things that you wear and use every day were made in New England factories.

Below is a list of some of the most important things manufactured in New England, with the principal raw material, or materials, used in the manufacture of each one.

FINISHED PRODUCTS	PRINCIPAL RAW MATERIALS
Cotton goods	Cotton
Woolen and worsted goods	Wool
Leather and shoes	Hides and skins
Paper	Pulp wood
Machinery and tools	Iron
Hardware and brass goods	Iron, copper, zinc

Questions to answer. 1. In the list of raw materials, which three come from animals? 2. Which one comes from trees? 3. Which one comes from a plant? 4. Which ones are metals which are obtained from the earth by mining?

Where do the raw materials come from? To answer this question, turn first to page 25, and work out the map studies in Group II.

When you have finished studying the map, you will have discovered two important things: (1) that New England does not produce many of the raw materials for its mills and factories; and (2) that some of the principal raw materials are *imported*, or brought in, to New England through the seaport of Boston.

Boston was one of the first trading towns to grow up on the coast of New England. Today it is New England's largest city and leading seaport, and one of the ten largest cities in the United States. If you follow the imports of raw materials as they leave Boston in motor trucks and freight cars, you will visit some of the leading manufacturing districts of New England.

Following the wool and cotton. Suppose you first follow the wool and cotton. Either one might lead you to many different cities and towns in New England. Both will surely lead you to the larger cities in the valley of the Merrimack River. Find this river on the map on page 21, and locate the cities of Lawrence and Lowell in Massachusetts and Manchester in New Hampshire (D6). In each of these cities the banks of the river are lined with mills and factories. *See Figures 15 and 19.*

All woven goods such as cotton and woolen cloth are called *textiles*, and the making of such goods is called *textile manufacturing*. So many cities and towns on the Merrimack River manufacture cotton and woolen goods that the Merrimack valley is one of the greatest textile-manufacturing districts in the world.

The cotton and wool will also lead you to the river valleys and bays of southeastern New England. Find Fall River and New Bedford on the map (D7 and E7). These are the two leading cotton-manufacturing cities in the United States. In what state are they?

Find Providence on the map (D7). This is the second largest city in New England. In what state is it? Providence manufactures large quantities of worsted goods, and the neighboring cities of Pawtucket and Woonsocket also have textile mills. There are many other textile-manufacturing cities and towns in Rhode Island and the neighboring parts of Massachusetts and Connecticut, and this part of New England is called the southeastern textile district.

You will find cotton and woolen mills in many other places in New England, but the largest number of mills are in the Merrimack valley and the southeastern district. In what natural region are the two great textile districts?

Following the hides and skins. Suppose you go back to the wharves in Boston and follow the hides and skins. They are of many different kinds, but the greatest quantities are cattle hides, sheepskins, and goatskins. They will lead you to several different cities not far from Boston where there are large factories called tanneries. In the tanneries hides and skins are made into leather.

From the tanneries the leather goes to factories where it is used in the manufacture of many different things. If you should follow it, you might find yourself in any one of many shoe-manufacturing cities in the Coastal Hilly Belt of New Hampshire and southern Maine. You would be still more likely to find yourself in Brockton, Lynn, or Haverhill, in Massachusetts, or back again in Boston, for these are the leading shoe-manufacturing cities of New England. Next to textiles, shoes are the most important things manufactured in New England. Study Figure 20, and then find the four leading "shoe cities" of New England on the map on page 21 (D-E6).



Figure 20. Making shoes in a factory at Lynn. The leather that is used in New England factories is made from hides and skins which come from many different parts of the world.

Raw materials that come by train. Although large quantities of raw materials are brought to New England in ships, even greater quantities are brought by the railroads. Much more cotton comes by train than by boat from the Southern States, and many carloads of wool, hides, and skins come from the central and western parts of the country.

You have learned that New England produces no iron, copper, or zinc. Since these metals are not among the leading imports of Boston, you can easily guess that they also reach New England by train. They come mostly from parts of the country farther west.

Following the metals. If you should follow the metals to all the places in New England where they are used, you would visit many different cities. One section to which they would surely lead you is southwestern New England. There you would find hundreds of factories where many different kinds of metal goods are made. These goods vary in size and value from needles and pins to big machines.

Turn over to page 26.

POLITICAL AND ECONOMIC MAP

Scale of statute miles



- ☆ State capitals ● Chief seaports
 • Locations of places having 2500 or more people
 ~~~~~ Navigable rivers      - - - - - Canals

## Lowlands

 Uplands and plateaus       Old, worn-down mountains

### Boundaries of natural regions





## MAP STUDIES

**Foreword.** The map opposite this page is an *economic map* of New England. That means that it tells something about the work of the people. In order to understand their work, you must have a clear picture of the kind of land in which they live. For this reason the natural regions are shown in the same colors that are used on the map of the United States (pp. 10-11).

**Group I**

1. What part of New England is mostly mountainous? 2. Find the Green Mountains on the map (C5-4). In what state are they? 3. Find the White Mountains (D4). In what state are they? 4. Turn to the map on pages 10-11, and you will see that the mountains of New England form the northern part of the Appalachian Mountains. What kind of mountains are they?

5. What kind of land borders the coast of New England? This region is a hilly upland and is called the Coastal Hilly Belt. 6. Turn to the map on pages 10-11 again, and notice that the Coastal Hilly Belt of New England is a northern extension of the Piedmont Belt. 7. Notice also that the Piedmont Belt is separated from the ocean by the level Coastal Plain. How, then, does the coast land of New England differ from the coast land farther south?

8. Find the hook-shaped peninsula of Cape Cod. This peninsula, with Nantucket and Martha's Vineyard, is New England's share of the Atlantic Coastal Plain. 9. Find two other lowland regions in New England. 10. One of them is the valley lowland of a river which flows all the way from north to south through New England. What river is it? 11. Between what two states does this river form the boundary? 12. In what two states is the broadest part of its valley lowland? 13. In what state is the third lowland region? 14. What lake does that lowland border? 15. As a whole, do you think the surface of New England is well suited to farming, or not? Give a reason for your answer.

**Group II**

1. The principal things which come from the farms, the forests, and the earth in New England are named in red on the land on the map

opposite. These are *products of the land*, and you must not confuse them with manufactured products. 2. Study the products of the land, and see how many of the raw materials listed on page 22 you can find.

3. Find Boston on the map (D6). 4. Notice that its location is marked by a black star and a red dot. Study the explanation in the upper left corner of the map, and tell what the star and the red dot mean. 5. The black arrow that points toward Boston will tell you the most important things that are brought to this port by boat. Things that are brought into a country from other countries are called *imports*. 6. What raw materials in the list on page 22 do you find among the imports of Boston? 7. What ones come from each continent of the world? 8. What raw material do ships bring to Boston from Egypt and from the Southern States of our own country?

**Group III**

1. What two cities are the chief seaports of New England? 2. Among the imports of Boston, what ones are raw materials for manufacturing? 3. What ones are foodstuffs? 4. What import of Portland is a raw material for the paper mills? 5. Notice that one of the imports of Portland is china clay. This clay is not imported for making china, as you might think, but for the paper mills. It is added to the wood pulp to make the paper heavier and smoother.

6. Among the imports of Portland what two are fuels which can be burned to make steam power? 7. Coal and oil are usually classed as raw materials. Counting these two fuels, how many of the principal imports of New England are raw materials?

**Group IV**

1. The red arrows that point away from Boston and Portland show the principal things that are *exported*, or carried away, from New England by boat. They are called *exports*. 2. Among the exports from Boston, what ones are products of New England's factories? 3. What export from Portland is an important product of New England? 4. Are the other exports from Boston and Portland things that are raised in New England or made there in large quantities?



Figure 21. A brass factory in southwestern Connecticut. Coal for power, and copper, zinc, and other raw materials are brought to this factory from other parts of the country.

At Waterbury and other places in the Hilly Belt of Connecticut you could visit factories where millions of clocks are manufactured and where huge quantities of copper and zinc are used in making brass and all kinds of brass goods. See Figure 21. In factories in New Britain and New Haven you could see how all kinds of hardware are made. At Bridgeport, and at Hartford and Springfield in the Connecticut valley, you could watch the manufacture of many different kinds of tools and machinery. Find the cities named in this paragraph on the map (p. 21, B-C7 and C6).

Machinery, tools, hardware, and other products of which metals are the principal raw materials, are made in many parts of New England, but the southwestern part is the great center for their manufacture. Many metals also come to New England for use in making jewelry and silverware. Providence and other places in southeastern New England lead in this kind of manufacturing.

**Power for the mills and factories.** A large part of the machinery in New England's mills and factories is run by steam power made by burning coal or by electric power made from steam power. Coal is plentiful in many other parts of our country, but New England has none that is worth mining. Like the raw ma-

terials, the coal for making power is brought to New England by boat and by train.

Most manufacturing centers are located either near the places where the more important raw materials for the factories are produced, or else near the places where coal is mined. Since New England produces so few raw materials and has no coal, there must be other reasons why it is such a busy manufacturing section.

**The story of manufacturing.** The early settlers made cloth, shoes, and other things by hand in their homes,

using raw materials from their own farms. Some of them had learned weaving, shoe-making, and other kinds of handwork in the Old World and were very skillful. Fathers trained their sons in handwork, and as time went on New England had large numbers of skilled workmen.

Then came the time when machines for spinning thread, weaving cloth, and other kinds of manufacturing were invented. The first machines were small and were run by hand, but they helped the workmen to make more goods and to make them faster. Soon larger and better machines were made. These were too heavy to be run by hand; so they were set up in mills near falls in the streams where the water power could be used to turn the wheels. Year after year more mills were built, until there was hardly a stream in southern New England that was not furnishing power for some kind of manufacturing. Thus *skilled workmen* and *water power* gave New England an early start in manufacturing.

The next change in manufacturing came when the steam engine was invented and steam power began to be used. New England had no coal, but the mills and the skilled workmen were there, and manufacturing was too well started to be given up. Coal was imported



from states farther south, and little by little steam power took the place of water power. The waterfalls are still a help in manufacturing, however; for they provide hydroelectric power for some of the mills and factories.

By the time manufacturing was well started, New England ships were trading in many parts of the world. This was another great help to manufacturing, for the trading ships brought raw materials to New England from many distant places.

**Manufacturing and the growth of cities.** Most of New England's largest cities owe their growth to manufacturing. The first mills, as you know, were built at the falls in the rivers. Of course the largest numbers of mills were built at the largest falls, where there was the most power. The more mills there were, the more workers were needed; so the largest towns grew up at the largest falls. For example, Lowell, Lawrence, and Manchester grew up at the three largest falls in the Merrimack River. Today they are the leading cities of the Merrimack valley.

In the same way Holyoke grew up at the largest falls in the Connecticut River. It began as a cotton-manufacturing town, and later was chosen as the location for the first paper mills run by machinery in New England. Today it manufactures more paper than any other city in the world. Find Holyoke on the map on page 21 (C6).

When steam power came into use, many of the trading ports on the coast began manufacturing because they could get both coal and raw materials easily by boat. Boston, New Bedford, Fall River, Providence, New Haven, and Bridgeport are cities which grew to be manufacturing centers because they were seaports first.

Many inland towns in the Hilly Belt began as trading centers for the surrounding farm lands. Later, when steam power came into use, those that had the best locations for

getting coal and raw materials became manufacturing centers. Worcester, for example, was a trading center on one of the first roads that were built inland from Boston. Later, one of the first railroads in New England followed the same route, making it easy for Worcester to get raw materials and coal. Today Worcester is a leading center for the manufacture of machinery and tools. Find this city on the map on page 21 (D6).

**Manufacturing and the distribution of people.** We speak of the people in a place as its *population*. Therefore we say that the places where there are many people to each square mile are *thickly populated*. What would a *thinly populated* place be?

Turn to the map on page 196 showing the distribution of people in the United States. Find the part of New England which is the most densely, or thickly, populated. Notice that it is also the part where manufacturing is most important. The reason for this is that manufacturing provides work for so many people. Notice how few parts of the United States are as thickly populated as this.

**A sentence to complete.** Complete the following sentence by giving the correct words to fill the blank spaces. If you have trouble with it, review what you learned on page 20.

The things that are needed for manufacturing are (1) \_\_\_\_\_, (2) \_\_\_\_\_, (3) \_\_\_\_\_, and (4) \_\_\_\_\_.

**Can you name these places?** Name each place in New England that is described below.

1. The natural region in which manufacturing is most important. *Fall River*
2. The river valley which is one of the greatest textile-manufacturing districts in the world. *Merrimack*
3. Another great textile district in New England. *Connecticut Valley*
4. The parts of New England where large quantities of metal goods are made. *Connecticut*
5. The state in which the leading "shoe cities" are located. *Massachusetts*



Figure 22. A dairy farm in New England. The cows are grazing on a hillside pasture. The fields farther away at the right are used to raise hay and corn to

feed the cows in winter. Notice how large and well-kept the barns are. Give two reasons to explain why New England dairy farmers need to have large barns.

### 3. NEW ENGLAND FARMERS AND THEIR WORK

As manufacturing increased in New England, many people left the farms and moved to the cities to work in the factories. As years went on, large numbers of people came also from Europe to find work in the manufacturing cities. Thus the cities grew larger and larger, and the number of people on the farms grew fewer.

Although manufacturing led many people to give up farming, it helped those who stayed on the farms by providing more customers for their products. The thousands of people in the cities must have food. New England farmers do not try to supply the cities with grain or meat, because these foodstuffs can be bought more cheaply from the states farther west. Instead, they *specialize* in certain products which the cities need to have fresh each day, and in other products to which the hilly surface and the climate are well suited. What do you think some of these special farm products may be?

**Supplying food to the cities.** Turn to the map on page 24. Among the products of the land what do you find that proves that there are many dairy farms in New England? Figure 22 is a picture of one of these farms.

The principal reason why dairy farming is important in New England is that the people of the cities need much fresh milk and cream. These dairy products will not keep long, and so they cannot be brought to New England from so far away as grain and meat can.

Fortunately, New England is much better suited to dairy farming than to most other kinds of farming. The climate is rather cool and rainy and is the best kind for the growth of grass. For this reason there are excellent pasture lands where the cows can graze in summer. Many of these pastures are on hill-sides which are too steep and rocky for the raising of crops.





Figure 23. Gathering and packing spinach in a market garden near Boston. In the distance are the glass greenhouses where fresh vegetables are raised in winter.

The cool, moist climate is also well suited to the raising of hay. Since hay is one of the best kinds of feed for cattle, it is the most important crop in New England. After the farmers cut the hay they dry it in the sunshine and store it in the barns for the cows to eat in winter. Some of the dairy farmers also raise corn for their cows. Instead of waiting for it to ripen, many of them cut it while it is green. Then they put both the stalks and ears through a machine which chops them in small pieces. In this form the corn is known as *ensilage*. It is stored in tall circular bins called *silos*, where it keeps green all winter. Find a silo in Figure 22.

From the dairy farms the milk and cream are rushed to the cities every day in the year in motor trucks, in fast freight trains, and in baggage cars of passenger trains.

Many New England farmers specialize in raising poultry. They get their living by sending fresh eggs to the cities and supplying the meat markets with chickens and ducks.

Near all the larger cities there are very small farms called *market gardens*. Here the gardeners raise vegetables out of doors in the warmer months, and in glass greenhouses dur-

ing the colder months. Every morning before daylight the market gardeners load their wagons and motor trucks with fresh vegetables and drive to the city markets. During the summer they supply most of the vegetables that are needed by the people in the cities. See Figure 23.

**A special crop in Maine.** Turn to the map on page 24 again. What farm product do you find in the northeastern part of Maine?

Potatoes grow best in places where the summer is cool and rather moist. For this reason, and because they are something that everyone eats, they are grown in all parts of New England. In northeastern Maine the farmers specialize in this crop. This section is so far north that it is too cool for many crops, but its climate is excellent for potatoes. The land is fairly level, and the soils, which are rather sandy, are also well suited to potato-growing. Figure 24 shows what you might see if you visited this part of Maine in September when the potatoes are being harvested.

Maine potatoes are so good that the farmers sell large quantities for seed to farmers in other parts of the country. If you live where potato-growing is important, try to find out if the farmers plant Maine seed potatoes.



Figure 24. Harvesting potatoes in northeastern Maine. The potatoes are dug by a machine which leaves them lying in rows on the ground. Then they are picked up, sorted, and packed in barrels to be sent away and sold.



Figure 25. Harvest time in the cranberry bogs. The cranberries grow on low vines. The harvesting is done with wooden scoops which have comb-like teeth to catch the berries and pull them off the vines.



Figure 26. Picking tobacco in Connecticut. The best tobacco is grown under cloth stretched over the fields on poles and wires. "Shade-grown" tobacco leaves are used for the outer "wrappers" of cigars.

**A marshland crop.** The early settlers found wild cranberries growing in the marshy parts of Cape Cod, but for many years they made little use of them. Then someone thought of cultivating them; that is, raising them as a regular crop. Today the Cape and the part of the Hilly Belt which joins it are dotted with cranberry "bogs," and Massachusetts raises more cranberries than any other state.

The bogs are perfectly flat, and most of them are small and irregular in shape, for they are tucked in among the low sand hills. They are marshy lands that are too damp for most crops, but for the cranberry, which is a marsh plant, they are just the right kind. Figure 25 shows how the cranberries are harvested. They are then packed in wooden crates or are canned, and are sold not only in New England but in distant parts of the country.

**A Connecticut-valley crop.** The Connecticut valley is one of the few parts of New England where there is considerable level land for farming. The widest part of the valley, in northern Connecticut and southern Massachusetts, happens to have just the right kind of soil for the growth of the best tobacco for

cigars. The climate too is well suited to "cigar-leaf" tobacco. Connecticut-valley farmers raise many kinds of crops, but tobacco is their special crop. *See Figure 26.*

Tobacco-growing takes much time and care. The plants are started under glass frames and later taken up and set out in the fields. While they are growing, the soil must be kept loose by hoeing or plowing between the rows, and all the weeds must be pulled up. The leaves of the shade-grown tobacco are picked one by one as they are ready, and this means going over the fields many times. The other kinds of tobacco are harvested by cutting the whole stalk.

From the fields the tobacco is taken to big barns where it is hung up to cure. Curing means drying very slowly so that the flavor of the tobacco will not be lost. After the tobacco is cured, the leaves are sorted, tied in bundles, and sent to big storehouses called warehouses. There they are packed away for some time to improve the flavor of the tobacco. The owners of the warehouses buy the tobacco from the growers and sell it to buyers from cigar factories.



**New England orchards.** In traveling through New England, you will see orchards of fruit trees on many of the hillsides and hilltops. One reason there are so many orchards is that tree crops can be grown successfully without farming machinery, and so they are better suited to hilly lands than are field crops such as wheat or corn. Turn to the map on page 24, and tell what kind of fruit trees you should expect to see in many New England orchards.

Apples grow well in a cool, moist climate like New England's, and they are better able to stand frost than are most fruits. For that reason they are the leading fruit crop of New England.

**Giving reasons.** Give reasons to explain why

1. New England has a cooler climate than many parts of the United States. (Study its location on the map on pages 10-11.)

2. There are many dairy farms, poultry farms, and market gardens in New England.

3. Many New England farmers have orchards of apple trees.

4. Potatoes are a special crop in northeastern Maine.

5. Cranberries are grown on Cape Cod and in the neighboring part of the Hilly Belt.

6. Tobacco is a special crop in the Connecticut valley.

#### 4. THE FORESTS AND THEIR USE

Nearly all New England was once covered with forests, but so many trees have been cut down that today most of the original, or first, forests are gone. "Second-growth" forests have grown up in many places, but they provide less lumber than the original forests because the trees are smaller. Nevertheless, large numbers of trees are still cut in New England for lumber and for another use. Do you know what that use is?



Figure 27. One way of hauling logs out of the New England woods. Much of the lumbering is done in the winter because the snow makes it easy to haul the logs out of the forests on sleds. How is the engine in the picture fitted to move over the snow?

**New England trees.** The trees in New England are of two kinds: *hardwoods* and *softwoods*. The hardwood trees are those which have broad, thin leaves and lose them in the winter. The softwood trees are those which have narrow leaves, some of them so narrow that they are called "needles." Most of the softwoods do not lose their leaves in the winter, and so they are called *evergreens*. Their wood is softer than that of the hardwood trees and is used in much larger quantities for lumber. The commonest hardwood trees in New England are oak, birch, and maple, and the commonest softwoods are white pine, spruce, fir, and hemlock.

**New England lumbermen and their work.** Judging from the products of the land shown on the map (p. 24), in what part of New England do you think work in the forests is still important? In what kind of manufacturing is pulp wood used as a raw material?

If you should visit the forests of northern New England in the autumn or winter, you would see the lumbermen cutting down the trees and sawing them into logs. This work is called *logging*, or *lumbering*. See Figure 27.



Figure 28. A large mill for making wood pulp and paper in Maine. Notice the great piles of pulp-wood logs. The logs are first stripped of their bark, washed, and cut in small chips. The chips are then ground

and mixed with water, or else "cooked," to make the pulp. The wet pulp is matted and dried between heavy rollers, and when this has been done it is ready to be made into paper. Name six uses of paper.

The logs are usually taken to the banks of the rivers, where they lie until the ice melts in the spring. Then they are rolled into the water and allowed to float downstream to the sawmills. In the sawmills the logs that are to be used for lumber are sawed into boards. Many of the mills are located at falls in the rivers and are run by water power.

In some parts of New England, machines for sawing logs are hauled into the woods where the lumbermen are at work and the logs are sawed into lumber there. Such machines are called portable sawmills, because they can be transported, or moved, from place to place.

**Pulp and paper mills.** The trees that are cut for pulp wood are mostly spruce and hemlock. The logs are sawed in short lengths by the lumbermen or in sawmills and are then sent to mills where wood pulp is made.

New England produces nearly a third of all the wood pulp made in the United States. There are some pulp mills in New Hampshire and Vermont, but the greatest numbers are along the larger rivers of Maine. Many of these mills also make paper. *See Figure 28.*

In the three southern states of New England there are large numbers of paper mills. Some

of these mills make their own wood pulp, while others buy their pulp from the northern states and from other countries. The Connecticut valley in Massachusetts and Connecticut is the leading paper-manufacturing section, chiefly because the first paper mills run by machinery were built there.

**Forests and shipbuilding.** As long as ships were made of wood, New England was the leading shipbuilding section of the country. But the time came when men learned to build ships of steel, which is made from iron. New England had no iron, and so, little by little, shipbuilding became more important in states farther south on the Atlantic coast where steel could be obtained more easily.

Today nearly all the large ships such as ocean liners and freighters are built of steel. New England no longer leads in shipbuilding, but it has two important centers where ships of steel are made. One is at Bath, in Maine, and the other is at Quincy, in Massachusetts. Find these cities on the map (p. 21, *F5* and *D6*).

Many small boats are still made of wood, and all along the coast of New England are small shipyards where motor boats, yachts, and fishing boats are built.





Figure 29. Gathering sap in a sugar orchard in Vermont. The sap of the sugar maples begins to flow in the spring before the snow is off the ground. The farmers "tap" each tree by boring a small hole through the bark and fitting a wooden tube into it. Pails hung over the tubes catch the sap as it comes from the trees.



Courtesy of Vermont Marble Company

Figure 30. In a marble quarry in Vermont. The blocks of marble are cut from solid rock by electric machines and are pulled up a steep little railway to the surface of the ground.

**A special tree crop.** If you have ever eaten maple sugar or maple sirup, perhaps you know that it is made from the sap of the sugar maple. This is one of the hardwood trees of northern New England. Maple sugar and sirup are made in many parts of New England, but Vermont produces much more than any other state. Very likely you can see some cans of Vermont sirup on your grocer's shelves, for it is sold in many parts of the United States. See Figure 29.

**Some differences to explain.** Explain the difference between

1. Original forests and second-growth forests.
2. Hardwood trees and softwood trees.
3. Pulp wood and wood pulp.
4. Sawmills and pulp mills.

**Some forest questions.** 1. Why do the lumbermen of New England cut down more softwood trees than hardwood trees? 2. In what two ways do the rivers of New England help in work connected with the forests? 3. What important kind of manufacturing in New England depends on work in the forests for much of its raw material? 4. What farm crop in New England might be called a forest crop?

## 5. PRODUCTS FROM THE EARTH

New England produces several kinds of stones which are used as building materials. Turn to the map on page 24, and find out what they are. What one of these materials do you find in every New England state? Which two seem to be special products of Vermont?

**Building stones.** Granite and marble are building stones of great importance. Do you know of any buildings that are made partly or wholly of these materials? Slate is also a building stone, for builders use it for covering roofs. Like coal and metals, building stones are taken from the earth, but we call the places that they come from *quarries* instead of mines. New England produces more dollars' worth of granite than any other section of the United States. Vermont leads all the states in value of marble production and stands second in slate production.

All things such as coal, oil, metals, and stone that come from the earth are called *minerals*. Remember this, because we shall often speak of the mineral products of our country. See Figure 30.

## 6. NEW ENGLAND'S FISHERIES

You have learned how the coast line of New England, with its many harbors, has helped the people to make use of the sea. Ever since the early days of settlement, fishing has been an important kind of work along the coast. Turn to the map on page 24, and name the more important kinds of fish that are caught in the waters bordering New England.

**The continental shelf and its fish.** On the map on pages 10-11 find the brown line in the water off the eastern coast of the United States. This line shows the depth of the water. Notice that it is marked *100 fathoms*. A fathom is six feet. How deep is the water along the 100-fathom line?

From the shore out to the 100-fathom line the sea bottom is covered with less than 600 feet of water, and is called the *continental shelf*. At the 100-fathom line the sea bottom slopes downward steeply, and beyond it the water is much deeper. The continental shelf, then, is really a shelf-like part of the continent which is covered by the shallower waters of the ocean.

Turn to the map on page 251, and find the island of Newfoundland (*O5*). The continental shelf from Newfoundland to southern New England is a feeding ground for millions of fish of the best kind for food. For this reason the waters covering the continental shelf form one of the best fishing grounds in the world.

**Inshore fishing.** In nearly every city and town along the coast of New England there are fishermen who carry on "inshore fishing." Almost every day from early spring until late fall they go out in motor boats to catch fish a few miles from the shore. Some of the fish are sold fresh as soon as they are brought in, but great quantities are frozen and packed away in cold-storage houses to be sold later. Freezing keeps the fish from spoiling.

One of the most valuable of the inshore fisheries is carried on principally on the coast

of Maine. Here many of the fishermen are called "lobstermen" because they catch lobsters. Lobsters are not really fish. They are small animals with hard shells which live on the sea bottom. The lobstermen catch them in wooden traps which they sink in the water.

**Deep-sea fishing.** The places on the continental shelf where the most fish are caught are far out to sea, and are called "banks." The most famous one is the Grand Bank south of Newfoundland, but there are others nearer New England that are just as good. All the year round New England fishing boats make "deep-sea-fishing" trips to the banks. Most of the boats come from Gloucester, Boston, or Portland. These are the three great fishing ports of New England. Find Portland and Gloucester on the map on page 21 (*E5, E6*).

Many of the boats are sailing vessels called "schooners," but all of them have engines to help them to sail faster. The schooners anchor on the banks, and the men go out in small row-boats to fish with "trawls." A trawl is a very long line with shorter lines attached to it three or four feet apart. The main line is kept on the surface of the water by wooden floats. The fishhooks are on the ends of the shorter lines, and when they are baited they sink to the bottom. The fishermen pull up these lines several times a day and take the fish that have been caught back to the schooners. There they pack the fish in ice to keep them fresh. When the fishermen have caught all the fish their schooner will hold, they sail for home.

Some of the fishing boats are called trawlers. They are run by engines and are larger and faster than the schooners. The men on the trawlers fish by dragging a huge net slowly along the sea bottom. The net catches all kinds of fish, and when it is drawn up those that are not wanted are thrown back into the water. By fishing in this way, the trawlers can catch more fish in a shorter time than the schooners.



**Marketing fish.** The fishermen of Gloucester bring home large quantities of codfish to be dried and salted. Figure 31 shows how this work is done. More fish are salted in Gloucester than in any other place in the United States. See if your grocer can show you a package of salt codfish from this Massachusetts city.

Boston is the greatest market for fresh fish in the United States and has a big pier which is used entirely for the fish business. In a good fishing season fishing boats of all kinds are crowded round the pier, waiting for their loads of haddock, cod, mackerel, or other fish to be unloaded.

Most of the fish that come to Boston are sold fresh. Many of them are taken directly from the fish pier to the city markets, and many are packed in ice and sent inland by fast trains. Some are put in a big cold-storage house on the pier and sold later as frozen fish. Portland, Maine, is a smaller market for fresh fish.

On the coast of eastern Maine you can visit factories where Maine sardines are canned. These fish are small herring which are caught in big nets. In many other places along the Maine coast lobster is canned and herring are smoked and dried. Sardines, canned lobster, and smoked herring are special fishery products of Maine just as salt codfish is of Massachusetts.



U.S. Bureau of Fisheries

Figure 31. Drying codfish at Gloucester. The fish are cleaned, salted, and spread out on racks to dry in the sun. Then they are packed in boxes and sent to all parts of the world. Find some fishing schooners in the picture.

## 7. NEW ENGLAND'S TRADE

We divide the products that are bought and sold between different countries or regions into three classes: (1) raw materials for manufacturing, (2) foodstuffs, and (3) manufactured goods. Before you read this section try to answer the following questions:

1. Of the three classes of products, which two does New England need to buy in largest quantities from other states and other countries?

2. Which one does New England probably sell in largest quantities?

**New England's import trade.** You already know about some of the raw materials which New England buys from distant lands for its mills and factories. Find out what else is imported from distant lands by working out the map studies in Group III on page 25.

What you have learned about New England's imports from distant lands is also true of its imports from other parts of the United States. They are chiefly raw materials for the factories, foodstuffs for the people, and fuels to provide heat and power.

**Planning fishing trips.** 1. Suppose you wanted to go on a deep-sea-fishing trip. At what places in New England should you be most likely to find a boat to take you? 2. What state should you visit if you wanted to go "lobstering"? 3. What state should you visit if you wanted to go herring-fishing? 4. What city in New England should you visit to find out how codfish are salted and dried? 5. What great city should you visit to find out how fresh fish are marketed?



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Figure 32. Looking over the roofs of Portland toward the harbor. Find some of the islands which help to protect the harbor and make it calm and safe for ships.

The two large buildings on the water front at the left are grain elevators where wheat from Canada is stored while waiting to be shipped to countries in Europe.

**New England's export trade.** *Exports* are things which are *exported*, or carried away, from a country or a region. Find out what New England exports to distant lands by working out the map studies in Group IV on page 25.

Did some of the exports from New England surprise you? You might well expect to find apples, leather, boots, and shoes among the exports, for they are things produced in large quantities in New England. But why should New England export cotton, which is grown only in the South, or foodstuffs such as wheat, flour, meat, and lard, which are produced chiefly in the interior plains of our country?

The reason is not hard to understand. Our country sells large quantities of cotton and foodstuffs to the people of Europe. In order to leave the United States, these products must pass through seaports on the coast. Since Boston is on the Atlantic coast, it is one of the *gateways* through which some of the exports from other parts of the United States pass on their way to Europe.

In the same way Portland serves as a gateway for the export of grain and other foodstuffs from Canada, the country which borders

the United States on the north. On the map on pages 198-199 find Montreal on the St. Lawrence River (*M1*). Montreal is Canada's chief seaport, but ships cannot reach it in winter because the river freezes over. The harbor of Portland, which is farther south, is open all winter long. For this reason it is chiefly in the winter months that Portland serves as a seaport for Canada. *See Figure 32.*

You must have been surprised to find so few of New England's manufactures among the exports from Boston. That is because most of the exports of manufactured goods go by train to other states, while some go to New York City to be shipped to distant lands. Find New York on the map (*B8*).

**A check.** Did you answer the questions at the beginning of this section correctly? If you did, you said that New England buys large quantities of raw materials and foodstuffs and sells large quantities of manufactured goods. Prove that you understand why this is true by answering the following questions: 1. Why does New England need to buy so many raw materials and foodstuffs? 2. Why are manufactured goods the principal products which it sells?





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Figure 33. A map of Boston and the neighboring part of Massachusetts. The center of the city is on the peninsula just north of the name "Boston." Point to it. Notice how many other cities and towns are

clustered round Boston. Notice also that the harbor of Boston is large and that it is protected from ocean storms by several islands. This is one of the best harbors on the eastern coast of the United States.

## 8. BOSTON — NEW ENGLAND'S LARGEST CITY

Boston is the capital of Massachusetts, that is, the city where the government of the state is carried on. It has been nicknamed the "Hub of New England." When you know what this nickname means, you will understand why Boston is the largest city of New England.

**The "Hub of New England."** Turn to the map on page 21 and notice that the railroads run out from Boston much as the spokes of a wheel run out from its hub. Just as the hub is the center of a wheel, so Boston is the center of New England's lines of *transportation*. Transportation means the carrying of people or goods from one place to another. The rail-

roads and roads which connect New England with other parts of the country start from Boston. The same is true of the shipping lines which connect New England with other parts of the world. Therefore, you may think of the railroads, the automobile roads, and the steamship lines as the spokes of New England's transportation wheel.

**Boston and its harbor.** Long before the days of railroads, Boston had become the chief seaport of New England. That was partly because of its large, safe harbor for ships. Figures 33 and 34 and their legends will tell you more about Boston and its harbor. Study them both carefully.





Figure 34. An airplane view of Boston. Find the peninsula which is the center of the city. The tallest building there is the Custom House, and many of the others are hotels, office buildings, and stores. Notice

the long wharves, or piers, in the part of the city nearest you. The first one is the fish pier, and the others are for freighters and passenger ships. Many piers also border the main peninsula and the land beyond.

Figure 34 shows clearly that the irregular shape of the land on which Boston is built gives it a long water front with plenty of space for wharves, or piers, where ships can be loaded and unloaded. Just back of the piers, in the foreground of the picture, you can see long lines of freight cars. These cars are standing on tracks in yards which are known as *freight terminals*. They are called freight terminals because they are freight yards at the terminals, or ends, of the railroad lines. Notice how easy it is for ships and freight trains to exchange goods at these terminals.

**Manufacturing and business.** On page 27 you learned that some of the cities on the coast of New England grew to be manufac-

turing centers because they were seaports first. Since Boston was the chief seaport, it received the largest quantities of raw materials, and it became the leading manufacturing center. When railroads were built, they helped the growth of manufacturing by providing a second way of obtaining raw materials and sending away manufactured goods.

A list of all the things that are manufactured in Boston would be very long, but the most important ones are foodstuffs, clothing, and shoes. You can understand why when you remember that these are things that everybody needs, and that New England is one of the most thickly populated parts of the United States.



When you visit Boston, you will see many big department stores and hundreds of smaller shops where all kinds of goods are sold. Besides the *retail* stores, where people buy goods in small quantities, there are many *wholesale* stores. Their owners sell goods in large quantities to retail stores in Boston and in all parts of New England. You will also see many banks and all kinds of business offices, for Boston is the great business center of New England.

**A market for wool and leather.** Because the manufacture of woolen goods and shoes started so early in New England, Boston became the first great port for importing the raw materials for these industries. Later, when cities in other parts of the country began to manufacture woolen goods and shoes in large quantities, Boston supplied them with much of the wool and many of the hides and skins that they needed. Because of its early start in this business, Boston is the greatest market in the United States for buying and selling wool and leather. See *Figure 35*.

*Summing up what you have learned.* Write a sentence summing up what you have learned about the rank of Boston among the seaports, railroad centers, manufacturing cities, and business centers of New England. This summary will show you why Boston is New England's largest city.

## 9. NEW ENGLAND AS A PLAYGROUND

In the summer New England is cooler than most parts of our country, partly because it is so far north, and partly because it gets cooling breezes from the ocean. For this reason, and because of the beauty of its mountains and shores, New England is a vacation land for people from many different states.

**Things people enjoy in New England.** In the summer many people go to the mountains of New England to camp and climb, and to fish in the lakes and streams. Others go to



Courtesy of Boston Tidewater Terminal, Inc.

**Figure 35.** Wool and hides from South America in a warehouse near the wharves in Boston. Buyers from factories in all parts of the country come to Boston to purchase supplies of wool, hides, and leather.

the seashore to enjoy the boating and the bathing. In the winter, when the ground is covered with snow and the lakes and ponds are frozen, New England has many visitors who enjoy skiing, skating, and other winter sports.

Many people also visit New England to see the places connected with the early history of our country. In Boston there are many interesting old buildings such as Paul Revere's house and the Old North Church. Not far from Boston are Plymouth, where the Pilgrims landed; Lexington, Concord, and Bunker Hill, where the first battles of the American Revolution were fought; and Salem, which was once the home of many of New England's famous sea captains.

**How visitors help business.** The visitors to New England help to provide work for people in hotels, restaurants, garages, and other places where the needs of guests are supplied. They also increase the business of the railroads, the motor-bus companies, and the steamship lines. So valuable is the *tourist business*, or entertainment of visitors, that it is one of the most important kinds of work in New England.

**Choices to make.** Choose the right ending for each of the following sentences:

1. Most of the early settlers in New England made their living by  
mining. farming. manufacturing.

2. Half the people who work in New England today are engaged in  
fishing. farming. manufacturing. lumbering.

3. The continental ice sheet helped New England to become a manufacturing region by giving it  
poor soil. many waterfalls. many lakes.

4. One reason why New England is a great manufacturing region today is that it made an early start by using  
hydroelectric power. water power. steam power.

5. Another reason is that it has many  
raw materials. coal mines. skilled workers.

**Grouping cities.** Below is a list of New England cities. Arrange them in the following groups, using one city three times and two others twice. When you have finished, check your groups by your book, correcting any mistakes you may have made.

- |                       |                       |
|-----------------------|-----------------------|
| 1. Chief seaports (2) | 5. A "paper city"     |
| 2. Fishing ports (3)  | 6. Cities which manu- |
| 3. "Shoe cities" (4)  | facture many kinds    |
| 4. Textile cities (6) | of metal products (8) |

#### LIST OF CITIES

Boston ✓ 13   Hartford ✓ 6   Lynn ✓ 3   Portland ✓ 21  
Bridgeport ✓ 4   Haverhill ✓ 3   Manchester ✓ 4   Providence ✓ 10  
3 Brockton ✓ 1   Holyoke ✓ 5   New Bedford ✓ 4   Springfield ✓ 6  
4 Fall River ✓ 1   Lawrence ✓ 1   New Britain ✓ 4   Waterbury ✓ 6  
2 Gloucester ✓ 1   Lowell ✓ 4   New Haven ✓ 6   Worcester ✓ 4

**Some things to explain.** Explain why

1. Dairying is the most important kind of farming in New England. *grazing lands*
2. New England produces much pulp wood. *spruce, fir, etc.*
3. Fishing is important along the New England coast. *shallow waters*
4. New England imports raw materials and foodstuffs and exports manufactured goods. *iron, steel, meat, etc.*
5. Boston is New England's largest city. *land*

**Using new words.** During your study of New England you have learned the meanings of several new words and phrases. Prove that you can use them correctly by giving the right words to fill the blanks in the sentences below:

1. The great ice sheets which once covered northern North America are called continental.

2. The part of a continent extending seaward from the coast and covered by the shallower ocean waters is called a peninsula.

3. The carrying of people or goods from one place to another is called transportation.

4. Goods sent out of a country or region are exported.

5. Goods brought into a country or region are imported.

6. Manufacturing is the changing of raw materials into finished products.

**Guiding tourists through New England.** One of the best ways to sum up the interesting things you have learned about New England is to imagine that you are going to guide some tourists on an automobile trip through these states. Below is a list of places to which you will surely wish to take them. Tell where each place is and what the visitors will see there.

1. The textile manufacturing sections
2. The southwestern manufacturing section
3. The "shoe cities"
4. Special farming districts of New England
5. New England's fishing ports
6. New England's forests
7. The quarries of Vermont
8. The largest city of New England

**A New England exhibit.** Look in newspapers and magazines for advertisements of things manufactured in New England. Bring the most interesting advertisements to school, and with your classmates prepare an exhibit of them to show the pupils of some other class.

**Special credit work.** Prepare a report about some factory near your home. Tell what is made there, what raw materials are used, and what kind of power runs the machinery. Try to get pictures to make your report more interesting.

*ent, near to*





© Irving Underhill, N. Y.

Figure 36. Part of Lower Manhattan, New York City, as it looks from the Hudson River. The taller buildings are so high that they are called "skyscrapers." They are used for business, and thousands of people work in them. Find Manhattan Island on Figure 39.



By Ewing Galloway, N. Y.

Figure 37. A view of Fifth Avenue, one of the principal streets of New York. The streets of this city are always crowded with people and automobiles.

### III. THE MIDDLE ATLANTIC STATES

**Foreword.** You have learned that southern New England is one of the most thickly settled parts of our country. Figure 193 on page 196 shows that the area of dense population extends southward from New England into the states that border the middle section of the Atlantic coast. These are the Middle Atlantic States.

Within these states are four of the ten largest cities of our country, four of the ten greatest seaports, and many of the leading manufacturing cities. As you study this chapter, find reasons why so many people live in this section of the United States.

Begin your study by doing the map work suggested below. This will help you to get acquainted with the Middle Atlantic States.

**Map work.** On the map of the United States which you are making trace the boundaries of the Middle Atlantic States from the outline map on page 315. Print the names of the states, or their abbreviations, on your map.

After you have finished this work, turn to page 53 and work out the map studies in Group I.

#### 1. NEW YORK CITY

On the map on page 52 find the city of New York (*F3*). In what state is it? At the mouth of what river does it stand? This is the largest city in the world, and the greatest seaport.

The land belonging to New York City is shown by black ruled lines on the map. In this small area live about seven million people, or more than a twentieth of all the people in the United States. In the neighboring cities and towns live another three million or more.

There are several reasons why so many people live in and round New York. See how many reasons you can discover as you read this section. First study Figures 36, 37, 38, and 39.

**Manhattan — the center of the city.** The center of New York City is the island of Manhattan. Nowhere in the world is there a busier place than this. From morning till night the streets are crowded with automobiles, motor trucks, and electric cars, and the sidewalks are filled with people. Electric trains speed over tracks built above the streets and through subway tunnels beneath the ground.

Lower Manhattan, shown in Figure 36, is the southern end of the island. Here thousands of people work in banks and business offices. A little farther north is the wholesale district, where there are many stores which carry on only wholesale business. They sell goods to buyers from retail stores in all parts of the United States.

In Figure 39 find the skyscrapers of Lower Manhattan. Then find a section of the city farther north where there are many tall buildings. This section is called the mid-town district. Here there are thousands and thousands of retail stores, varying from little shops where special things are sold to great department stores where almost anything can be bought. Here too are the hotel district and the theater district. At night, when lower Manhattan is quiet, this part of the city is bright with electric lights and alive with people. Motor busses and automobiles crowd the streets, and thousands of people pour in and out of the theaters, moving-picture houses, restaurants, and hotels. It is said that more than a million visitors sleep in New York's hotels every night.

Still farther uptown is the apartment-house district. The apartment houses are tall buildings, some fifteen or more stories high, with many apartments, or sets of rooms for separate families, on each floor. In these houses hundreds of people live under one roof. Try to think why very few families in Manhattan live in separate houses.

**The harbor and the water front.** New York has one of the best harbors in the world, and since the city is built mostly on islands it has a long water front. Ships coming to this great seaport from the Atlantic Ocean enter the broad Lower Bay, pass through the Narrows into the Upper Bay, and then turn either into the East River on the east side of Manhattan or into the Hudson on the west side. Both sides of both rivers are lined with

long piers where hundreds of ships can be loaded and unloaded at the same time.

If you are on a ship which enters the East River, you see the crowded buildings of Manhattan on the left and those of Brooklyn on the right. Brooklyn alone has over two and a half million people. It is connected with Manhattan by three huge bridges over the river and by tunnels for electric trains under the river. Every day thousands of people travel back and forth over the bridges and through the tunnels.

Along the water front on both sides of the river you will see many ships loading and unloading their cargoes at the piers. Others are moving to and from the piers, and still others are anchored in the river. Most of them are freighters, and they have come from countries all over the world.

If your boat turns into the Hudson, here too you will see hundreds of boats, large and small. Among them are great ocean liners and smaller freighters. Many of these ships have come from Europe and many from other seaports of the United States.

Back and forth across the Hudson, ferry-boats come and go, carrying people between Manhattan and the west side of the river. Beneath the river, automobiles pass back and forth through a great tunnel.

**The Jersey side.** The west side of the Hudson opposite New York City is called the "Jersey side" because it is in the state of New Jersey. Find Hoboken and Jersey City on Figure 38, and notice how many railroads meet in these cities. Under the river there are railroad tunnels through which passenger trains run from the cities on the Jersey side to Manhattan.

At Hoboken, Jersey City, and other places on the Jersey side there are many piers for ocean liners and freighters, for these cities have a large part in the shipping business of New York. Near the piers are great freight





Figure 38. A relief map of New York City. The city is made up of five divisions called *boroughs*. Their names are printed in white on the map. What two are on the western end of Long Island? What two

terminals like those in Boston, only much larger. If you should visit the terminals, you would see hundreds of freight cars loaded with products from other parts of the country, — cotton from the South, grain and meat from the West, and many other things.

During the night, when the fewest boats are moving on the river, the freight cars are run out on barges, or flat boats, which are towed across to Manhattan. There the cars are unloaded and later sent back across the

are across the East River from Long Island? What one is on Staten Island? What three rivers make Manhattan an island? The cities on the west side of the Hudson River are in the state of New Jersey.

river. Many of them go back loaded with goods that are to be sent south and west from New York. You will learn more about the cities of northern New Jersey a little later.

Why New York is the greatest seaport. The large, deep harbor of New York is one reason why this city is such a great seaport. Another is that, except for Boston, New York is our nearest port to Europe, the continent with which the United States carries on the most trade. But there is a third, and still

more important, reason which you can discover by studying the maps.

Turn to the map on page 49, and follow the Hudson River northward from New York City to the point where it is joined by the Mohawk River from the west. Notice that the valleys of these two rivers form a *lowland route* through the Appalachian Highlands. This lowland is called the Hudson-Mohawk Valley.

At its western end the Hudson-Mohawk Valley joins the Lake Plain bordering Lake Ontario and Lake Erie, and the Lake Plain leads westward to the Central Plains. Thus there is a lowland route for railroads all the way from New York City to the Central Plains.

The map on pages 198-199 shows that there is no other lowland route from the Central Plains through the Appalachian Highlands to the Atlantic coast. Railroads cross the highlands in other places, but the low, easy route provided by the Hudson-Mohawk Valley is by far the most important highway of travel and transportation. Since New York stands at the Atlantic end of this great natural highway, it has become the greatest ocean gateway on the Atlantic coast. And since our country carries on more trade with Europe than with any other part of the world, New York has become the greatest of all our seaports.

**New York's trade.** New York exports and imports so many different kinds of goods that there is room on the map on page 52 to show only a few of the leading ones. Read them over, and you will see that New York trades with all parts of the world. Among the exports, what ones do you think come from the interior plains of our country? What one comes from the Southern States? The manufactured goods are shipped all over the world, but the foodstuffs and raw materials go chiefly to the densely settled countries of

northwestern Europe, where large numbers of people live and work in manufacturing cities.

Ships from every continent bring to New York huge quantities of raw materials for manufacturing and many different foodstuffs. Name two of the important foodstuffs and one raw material that are imported. Manufactured goods are imported too.

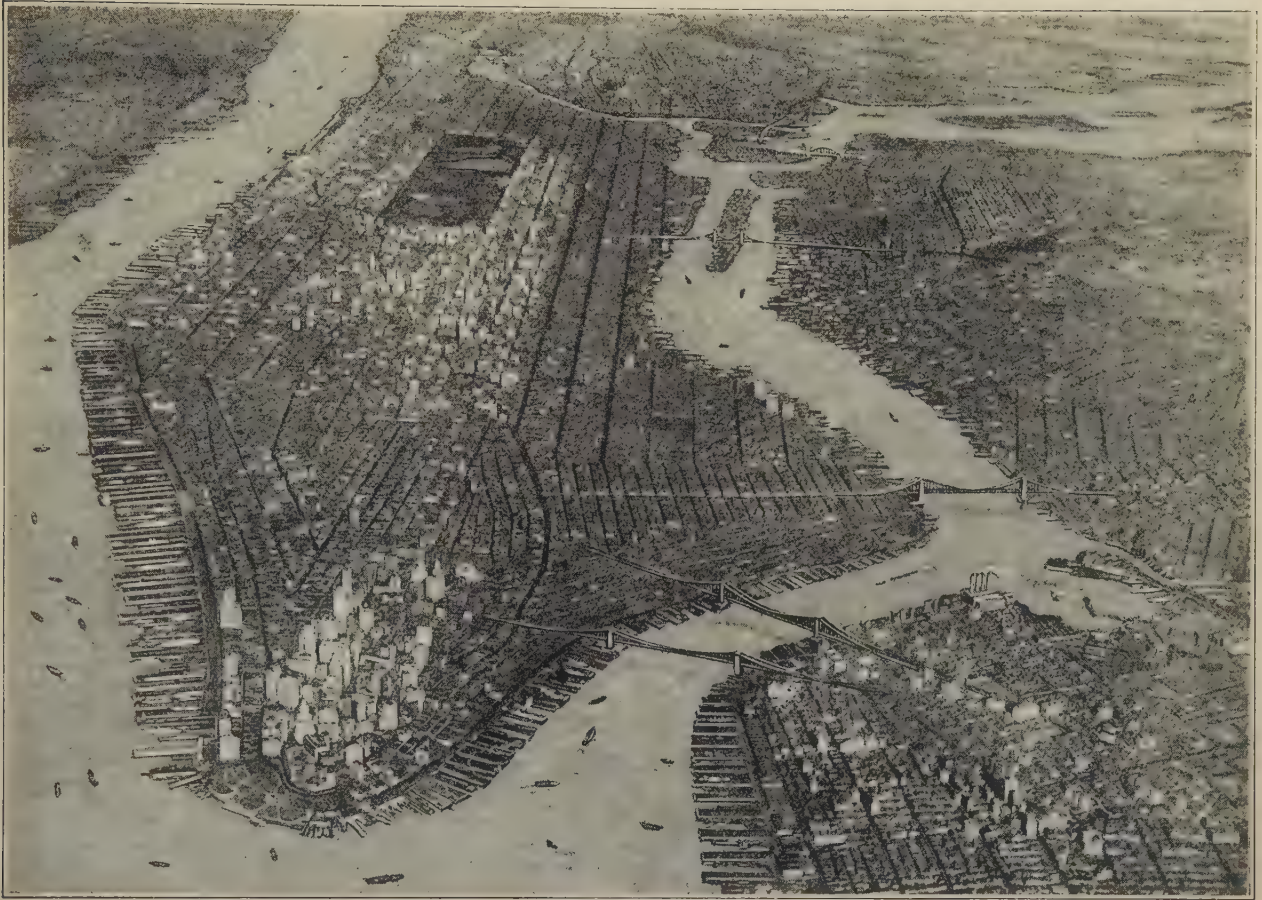
Some of the raw materials are used in factories in and near New York, and large quantities are sent by train to manufacturing cities in other parts of the country. New York, therefore, is a great *distributing center* for products imported from distant lands.

Besides all the ships that come to New York from other countries, there are many from other seaports of the United States. They bring foodstuffs, coal, and raw materials for use in and near New York, or for export to distant lands, and they carry back to their home ports manufactured goods from New York and imports from other countries.

**The greatest manufacturing city.** Since New York is our greatest seaport, you will not be surprised to learn that it is also our greatest manufacturing city. It has thousands of factories, large and small, and they manufacture hundreds and hundreds of different things. The most important ones are clothing and foodstuffs. You can understand why when you remember that everyone needs food and clothing, and that in New York City alone live more than one twentieth of all the people of the United States. New York also supplies manufactured goods to many other parts of the country.

When you were studying about New England, you learned that raw materials, power, workers, and markets are necessary for manufacturing. Since New York is our greatest seaport and is connected with all other parts of the United States by railroads, it has the best possible means of getting raw materials





Airview by Airmap Corporation of America, N.Y.

Figure 39. A view of New York City from an airplane flying over the Upper Bay. The East River is on the right and the Hudson River is on the left. Between them is Manhattan Island, the center of the great city. Part of Brooklyn and Queens can be seen at

the right. Find the skyscrapers of Lower Manhattan and count the bridges over the East River. Notice the long rows of piers for ships on both sides of the East River and the Hudson. Its long water front is one reason that New York is such a great seaport.

and coal for its factories, and for shipping manufactured goods to markets near and far. Since so many people live in and near the city, there are plenty of factory workers too.

**A gateway for newcomers.** Another reason why New York has plenty of factory workers is that it is the great gateway into the United States for people who come from distant lands to make their homes in this country. Such people are called *immigrants*. Near the inner end of the Upper Bay is Ellis Island, where these newcomers leave the ships that bring them in, and where inspectors examine them to see if they are healthy and if

they can read. If they pass these tests, they are allowed to stay; if not, they are sent back to their homes.

Many of the immigrants remain in New York or the neighboring cities and find work there. Others move farther inland, and help to supply other cities with factory workers.

**New York's neighbors in New Jersey.** You already know that Hoboken and Jersey City have a large share in New York's shipping and trade. These and the many other cities and towns which are New York's neighbors in New Jersey also share its advantages for manufacturing.





Figure 40. The Falls of the Potomac. These falls are at the place where the Potomac River crosses the fall line between the Piedmont Belt and the Coastal Plain. Find this place on the map on page 52.

The largest of these neighboring cities is Newark. This city manufactures almost as many different things as New York. Among its most important industries are the manufacture of electrical machinery and supplies, the making of paints and varnishes, the tanning of leather, and the making of jewelry.

At Hoboken ships are built and repaired and ships' engines are made. In Jersey City there are great slaughtering and meat-packing plants, where cattle and other animals are killed and the meat prepared for use.

Bayonne, just south of Jersey City, is the greatest oil-refining center in the world. The oil is *petroleum*, which comes to Bayonne through long pipe lines from the "oil fields" where it is produced. You will learn about the oil fields later. Kerosene, gasoline, and other mineral oils which are separated from petroleum by refining are exported from New York to all parts of the world.

At Elizabeth the largest single industry is the manufacture of sewing machines, but many other things for which iron and steel are the chief raw materials are made here. Farther north is Paterson, the greatest silk-manufacturing city in the United States.

**Making a summary.** Write a sentence summing up what you have learned about the rank of New York City among all the cities of the United States (1) in population, (2) as a seaport, and (3) as a manufacturing center.

**Something to prove.** The five statements below help to explain why New York is our greatest city. Prove that you understand each statement by telling why it is true.

1. More of the trade of the United States with distant lands passes through seaports on the Atlantic coast than through seaports on the Pacific coast. Why?

2. New York is better located than any other port on the Atlantic coast to serve as a gateway for this trade. Why?

3. Hundreds of ships can load and unload their cargoes at New York at the same time. Why?

4. New York has one of the best locations in the United States for bringing together raw materials for manufacturing and for marketing manufactured goods. Why?

5. Trade and manufacturing have led millions of people to make their homes in and near New York City. Why?

## 2. THE FALL-LINE BELT

On the map on page 52 find the *fall line*, where the Piedmont Belt meets the Coastal Plain. Notice how many cities are located on or near this line. They are often called the cities of the *fall-line belt*. Among them are two great seaports, two state capitals, and Washington, the capital of our country. Find each of these cities on the map. Which two are the seaports? Which two are the state capitals? On what river is Washington located? What part of the fall-line belt has the largest number of cities?

As you study this section, you will learn what the fall line is, and why there are so many important cities along it.

**What the "fall line" means.** You already know that the Piedmont Belt is rolling and hilly like the Hilly Belt of New England, while the Coastal Plain is low and mostly level. Turn to the map again, and notice how many



ivers rise in the Piedmont Belt or west of it and flow southeastward to the ocean. South of the Hudson most of these rivers have falls and rapids where they tumble down from the hilly Piedmont Belt to the level Coastal Plain. That is why the boundary between the Piedmont Belt and the Coastal Plain is called the fall line. See *Figure 40*.

East of the fall line there are no falls or rapids in the streams. Boats, then, may go up the larger rivers to the margin of the Piedmont Belt, but there they have to stop on account of the falls. That means that the rivers are navigable from the sea to the fall line. The fall line is, therefore, the end of navigation, or, as we say, the *head of navigation*. Before you read further, work out the map studies in Group II on page 53.

**The fall line and the early settlements.** Thirteen years before the Pilgrims settled at Plymouth a small band of Englishmen crossed the Atlantic Ocean and sailed into the mouth of the James River in what is now the state of Virginia. There, on a small island near the present town of Williamsburg (map, p. 49, *D 5*), they made the first settlement on this part of the Atlantic coast. They called it Jamestown. Have you ever read stories of Sir Walter Raleigh or Captain John Smith? These men were among the first Virginia settlers.

After the settlement of Jamestown other groups of people came from the Old World to make their homes on the middle Atlantic coast. Many of them went inland as far as they could in boats. There, at the fall line, they started settlements. Some of the early fall-line settlements have grown to be very large and important cities.

When the people of this section began manufacturing, the falls in the rivers were a great help to them, just as the falls in New England were a help to the people who lived there. The falls, then, first led to settlement,

and later helped the cities and towns to grow by giving them power for manufacturing.

**Special credit work.** Find out how the early settlers in Virginia made their living. Compare their work with the work of the early settlers in New England.

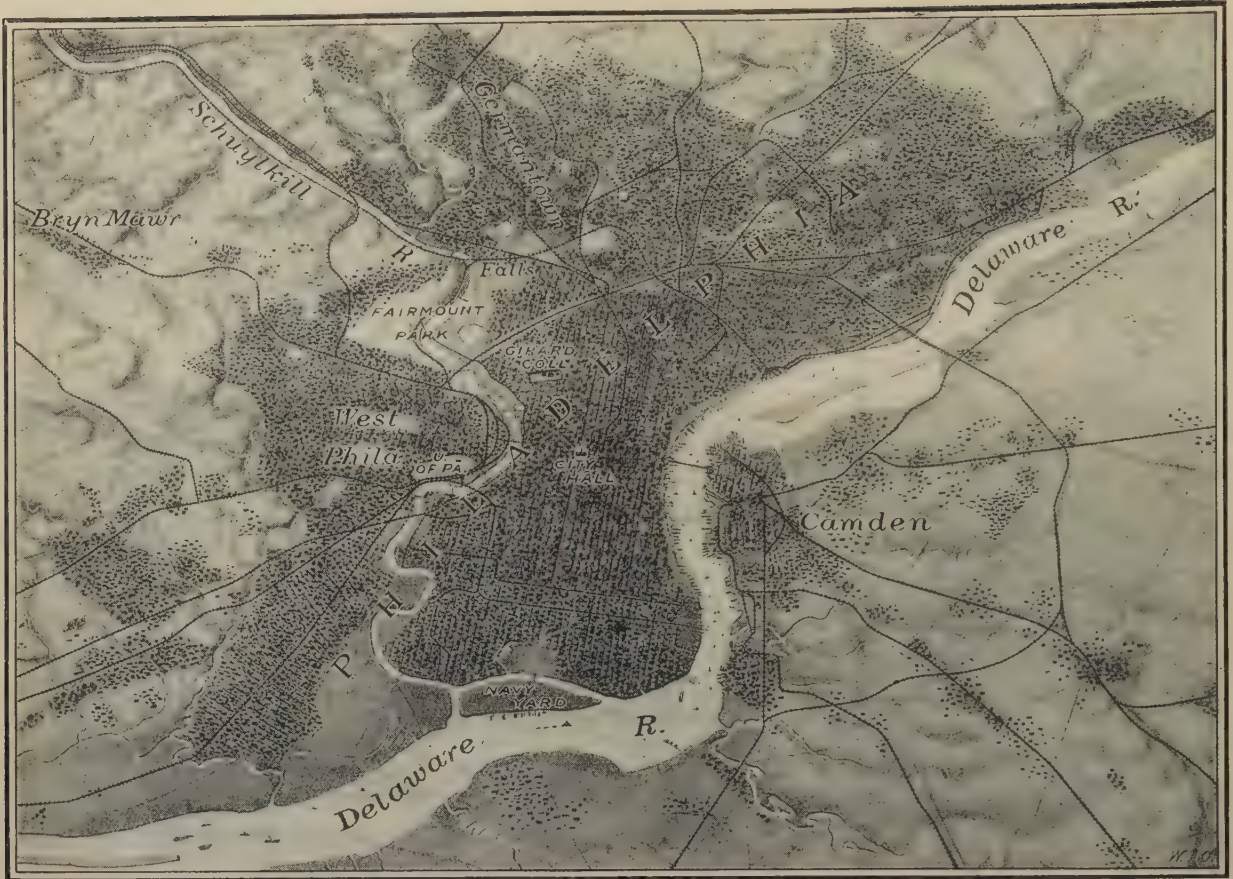
**The city at the falls of the Delaware.** Turn to the map on page 52 and find Trenton, the capital of New Jersey (*E 3*). Notice that it is located near the place where the Delaware River crosses the fall line. There are falls in the river at this point, and Trenton is one of the large fall-line cities.

The falls gave Trenton an early start in manufacturing. Today they furnish electricity for the city and part of the power for its factories. Coal for steam power comes by train from the mines in Pennsylvania. Raw materials come by train from the neighboring ports of New York and Philadelphia, and from more distant parts of the country.

Trenton's greatest industry is the manufacture of pottery. This includes chinaware, crockery, and all kinds of porcelain goods such as bathtubs and washbowls. The chief raw material for pottery-making is clay. Turn to the map and find out where Trenton gets some of the clay for its potteries.

**Philadelphia.** South of Trenton the next large fall-line city is Philadelphia, in Pennsylvania. This is the third largest city in the United States, and the second greatest seaport on the Atlantic coast. Find Philadelphia on the map (*E 4*). On what river is it? Trenton is at the head of navigation on the Delaware River, but large ocean ships cannot go beyond Philadelphia because the water is not deep enough. Philadelphia, then, is the head of navigation for ocean ships.

Figure 41 will tell you more about the location of Philadelphia, and Figure 42 will show you how this great city looks from an airplane. Study the map and the picture.



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Figure 41. A relief map of Philadelphia. The first settlement was made at the falls in the Schuylkill River. Find the falls on the map. As the settlement grew into a city, it spread to the Delaware River. Notice what a

long water front Philadelphia has. How is this helpful to shipping? Across the Delaware from Philadelphia is the city of Camden, New Jersey. Find a bridge which has been built to connect Camden with Philadelphia.

Turn to the map on page 52, and study the exports and imports of Philadelphia. What one of the exports suggests that Philadelphia is a gateway for the shipment of products from the interior plains? Among the imports what do you find to remind you of Boston?

Now turn to the map of the United States on pages 198–199 and study the railroads that meet in Philadelphia. Notice that they come from all directions,—from New York and New England, from the Central Plains, and from the South. Thus Philadelphia, like New York, is a great railroad center.

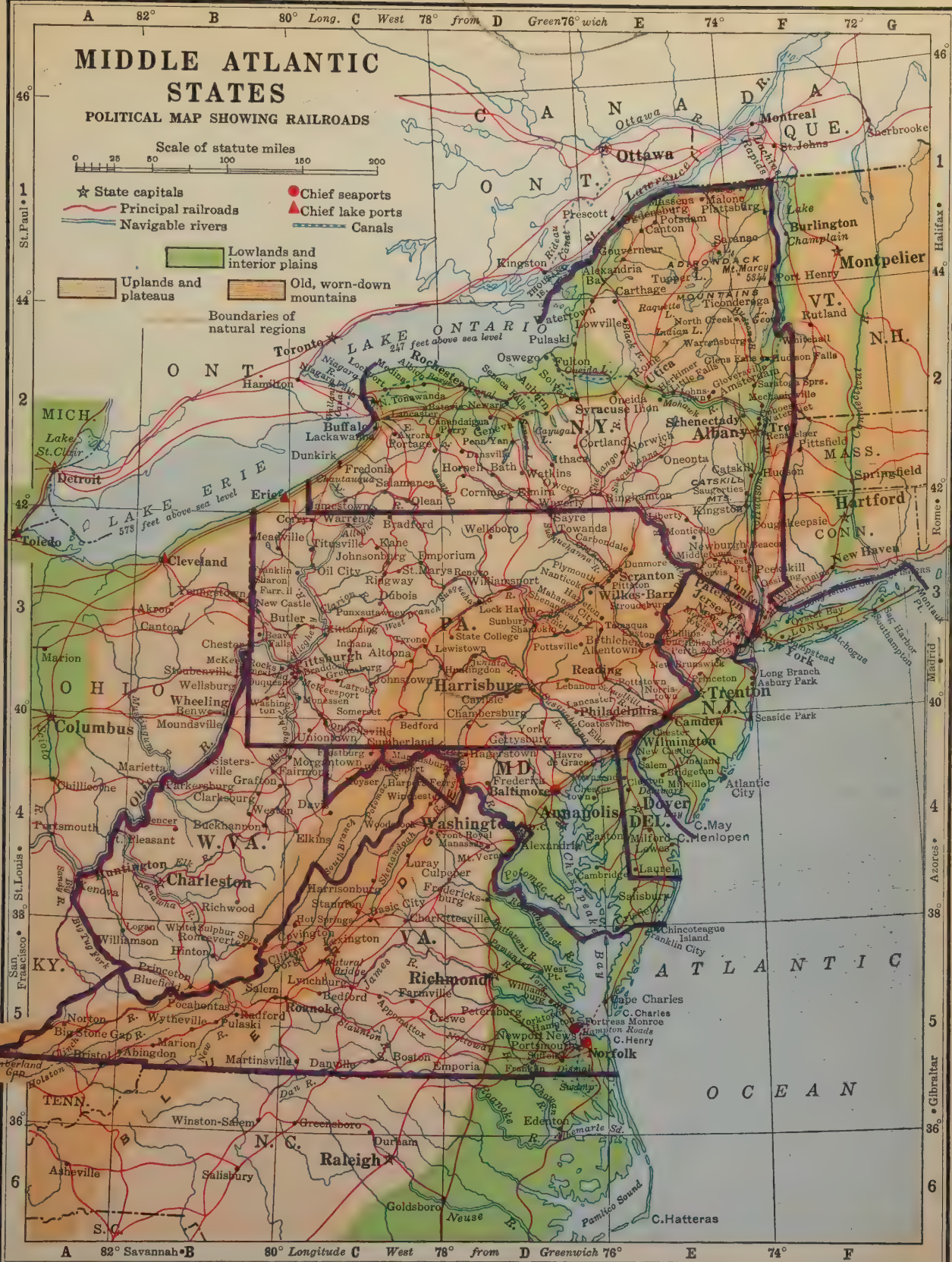
Because Philadelphia is a great seaport and a great railroad center, it is also a great manufacturing center. Its most important

kind of manufacturing is the printing of magazines, newspapers, and books. What imports from distant lands are used in this kind of work?

As you would expect in so large a city, the making of clothing and the preparation of foodstuffs are very important kinds of work. Among the foodstuffs prepared in Philadelphia, refined sugar is the most valuable. Refined sugar is the fine white sugar which we use on our tables, and it is made from coarse "raw" sugar. Study the map, and explain how the refining of sugar is connected with the imports and exports of Philadelphia.

Other important kinds of manufacturing are the making of woolen and worsted goods









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Figure 42. An airplane view of Philadelphia from across the Delaware River. The center of the city is the part where all the tall buildings are. Notice the piers which line the water front. They stretch for several miles

along the river, providing space for many ships to load and unload at the same time. Among the ships that come to Philadelphia are many from distant lands and many from other seaports in the United States.

and the tanning and finishing of leather. Philadelphia's imports of wool, hides, and skins are so large that this city is one of the two greatest markets for wool and leather in the United States. What city is the other great wool-and-leather market?

Still other valuable manufactures are knit goods and cotton goods. Knit goods, like textiles, are made of thread, but they are manufactured on knitting machines instead of being woven on looms.

Philadelphia makes also many different kinds of things of iron and steel. Just outside the city is the largest plant in the world for the manufacture of railroad locomotives. This plant makes locomotives for many railroads in the United States and other countries.

You may think of Philadelphia as the second great gateway city of the Atlantic coast. Its advantages for trade and manufacturing are much like those of New York, except that it has no *lowland* route connecting it with the interior of the United States.

**Philadelphia's neighbors.** The cities which are close to Philadelphia share its advantages for trade and manufacturing just as those around New York share the advantages of that city. Across the river is Camden. Find this city on the map. In what state is it?

At Camden, and also in Philadelphia, there are large shipbuilding yards. These yards, and others farther downstream, make the Delaware one of the greatest shipbuilding rivers in the world. Next to shipbuilding, the





Chesapeake Aircraft Company

Figure 43. An airplane view of part of the harbor of Baltimore. The business center of the city is at the right in the picture. Find some ships at the piers bordering the peninsula nearer you. Find also some

large freight yards on the peninsula, with long lines of freight cars standing on the tracks. Why are the freight yards so near the piers? What do you think the large buildings on the peninsula are used for?

most important manufacturing industry in Camden is the tanning and finishing of leather.

South of Philadelphia are Chester and Wilmington. Find these cities on the map (p. 49, *E 4*). Which one is in Delaware? Both of these cities are shipbuilding centers and carry on many other kinds of manufacturing. At Wilmington, which is the largest city in Delaware, there is a very large plant which manufactures gunpowder and other explosives. This plant manufactures paint also.

**Baltimore.** South of Philadelphia, on the fall line, is Baltimore, the largest city of Maryland. This is another great seaport and manufacturing city. Find Baltimore on the map on page 52 (*D 4*). Up what bay must ships sail to reach Baltimore? The city is not located on Chesapeake Bay itself, but on a river which flows into the bay. The river

is deep enough for ocean ships, and the water front is long enough to give space for many piers. See *Figure 43*.

Turn to the map on pages 198–199 and study the railroads that meet in Baltimore. That city, like Philadelphia, has direct railroad connection with the Central Plains as well as with the regions to the north and to the south.

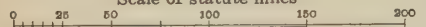
You can see that Baltimore's advantages for manufacturing are much like Philadelphia's. It is both a seaport and a railroad center. Therefore it can get coal and raw materials easily, and can market its products both by train and by boat.

Look at the map on page 52 again and study the exports and imports of Baltimore. What do you find among them to make you think that Baltimore is another gateway for the shipment of products from the interior



### POLITICAL AND ECONOMIC MAP

Scale of statute miles



- ☆ State capitals  
 • Locations of places having 2500 or more people  
 Navigable rivers  
 Canals  
 Lowlands and interior plains  
 Uplands and plateaus  
 Old, worn-down mountains  
 Chief lake ports  
 Boundaries of natural regions





plains? What do you find to make you think that Baltimore has many manufacturing plants that make use of metals?

As in New York and Philadelphia, the preparation of foodstuffs and the making of clothing are important kinds of work in Baltimore. What do you find among the imports to make you think that the printing of magazines, newspapers, and books is also important there?

Think over all that you have learned about Baltimore and Philadelphia and explain the ways in which they are alike. You are not expected to memorize their exports and imports or their manufactured products, but you should be able to tell why they are great seaports and busy manufacturing cities.

*Turn over to page 54.*

## MAP STUDIES

### Group I

1. As a whole, are the Middle Atlantic States mostly hilly and mountainous, or mostly level plains? 2. What region of these states is a southern extension of the Coastal Hilly Belt of New England? 3. Does the Piedmont Belt border the coast as the Hilly Belt does in New England? 4. What is the region bordering the coast of the Middle Atlantic States called? 5. Turn back to the map on page 24 and tell what small part of New England belongs to this region.

6. What states in this group have a share of the Appalachian Mountains? 7. What other region of old, worn-down mountains do you find in one of the Middle Atlantic States? 8. In what state is it? 9. What large natural region forms the western part of the Middle Atlantic States? 10. Does New England have any share of that region?

### Group II

1. Find Delaware Bay on the map (E4). 2. This bay forms the mouth of the river which separates New Jersey from Pennsylvania. What river is it? 3. What city is at the head of navigation on this river? 4. What city is located at the point where the Schuylkill River flows into the Delaware River?

5. Find Chesapeake Bay on the map (D4-5). 6. Ask your teacher to show you how to measure the length of this bay by using the scale of miles on the map. 7. Find some of the rivers which flow into Chesapeake Bay from the west. Notice that the mouths of some of them form long, narrow bays which extend far into the land.

8. On this map only the rivers which are deep enough for ocean-going ships or good-sized river boats are shown as navigable. The others are too shallow for large ships. You might see small boats on them, but we do not speak of them as navigable rivers. Name three navigable rivers which flow into Chesapeake Bay. 9. To what city is the Potomac River navigable? 10. To what city is the James River navigable?

### Group III

1. Name the states of the Middle Atlantic group which have a share of the Atlantic Coastal Plain. 2. What island is New York's share? 3. What state is almost wholly in the Coastal Plain? 4. In what way is the Coastal Plain well suited to farming? 5. What are the most important kinds of crops there? 6. What two seaports of Virginia are on the Coastal Plain?

7. Name the states of the Middle Atlantic group which have a share in the Piedmont Belt. 8. What region of New England is most like the Piedmont Belt? 9. What farm products of the Piedmont Belt remind you of New England?

### Group IV

1. Find Buffalo on the map (C2). 2. Trace the Barge Canal eastward from Buffalo. 3. Through what lake does it pass? 4. Point to the place where the canal joins the Mohawk River. 5. The Mohawk River has been deepened to form the eastern section of the Barge Canal. Trace it eastward to the Hudson River. 6. How can you tell from the map that the Hudson River is navigable? 7. What great city stands at its mouth? 8. Explain how boats may pass all the way from Buffalo to New York City.



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Figure 44. A relief map showing the location of Washington. The darker gray shows the extent of the District of Columbia. The numbers stand for the locations of interesting places to visit in Washington: (1) the

Washington Monument; (2) the Lincoln Memorial; (3) the National Cemetery, where many great Americans are buried; (4) the Naval Observatory; (5) the Zoological Park, or "zoo"; (6) the Soldiers' Home.

Our national capital. Turn to the map on page 52 and find Washington (D4). On what river is it located? This city, as you know, is the capital of the United States. At first glance you might think that it is in Maryland. Look more closely at the map and you will see that it is in a small separate area marked D. C. These letters stand for District of Columbia. Figure 44 will show you more about the location of Washington. Study the map and its legend.

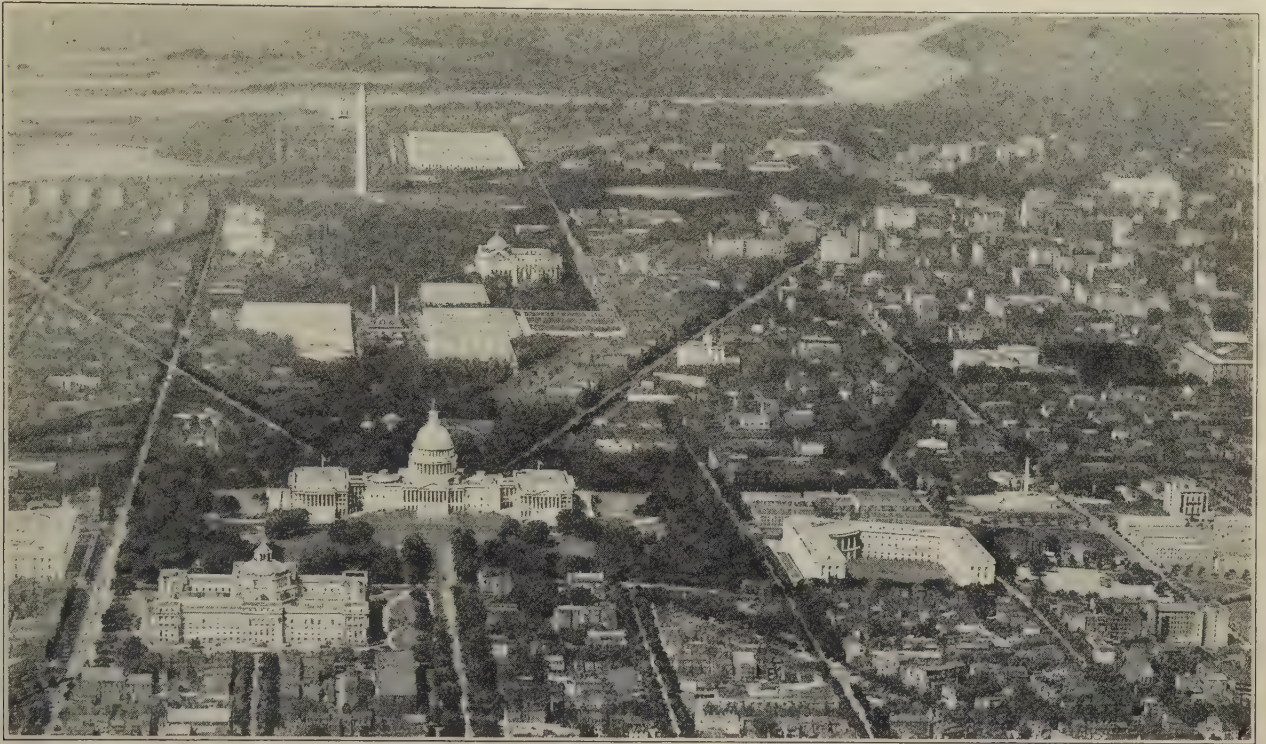
Find the town of Alexandria on Figure 44. A little farther downstream from Alexandria, on the same side of the Potomac, is Mount Vernon, the home of George Washington. His house stands on a hill overlooking the

river, and it looks today much as it did when he was president of the United States.

Washington and a French engineer made the plans for the national capital and chose the location for the White House, where the president lives, and for the capitol building, where Congress meets. Figure 45 will give you an idea of what a beautiful city Washington is. Study the picture and its legend.

If you should visit the water front in Washington, you would find little to remind you of the great seaports farther north. There are wharves and docks, of course, but they are chiefly for small passenger boats that run down the river and for boats of the United States Navy. Nor would you see much in





U. S. Army Air Service

Figure 45. An airplane view of Washington looking toward the Potomac River. The Capitol, where Congress meets, is the large building with the round dome. Farther away is the tall Washington Monument, and

Washington to remind you of the great manufacturing industries of New York, Philadelphia, or Baltimore.

Washington is neither a seaport nor a great manufacturing city. Most of the business carried on there has to do with the government of our country. Thousands of men and women work in the offices of the different departments of the government, and thousands more are engaged in supplying the government workers with food, clothing, and other things that they need. The work of government, therefore, makes necessary many other kinds of work in the city.

**Sentences to complete.** Complete the following sentences with reasons which your book has given you:

1. The line where the Piedmont Belt meets the Coastal Plain is called the *fall line* because

beyond that is the Lincoln Memorial, in which there is a wonderful statue of Abraham Lincoln. The avenue running off to the right from the Capitol leads straight toward the White House, where the president lives.

2. Boats cannot go up the rivers beyond the fall line because *of the falls*.

3. Many early settlements were made at the fall line because *rivers were navigable*.

4. Many of the fall-line towns became manufacturing centers because *of the falls*.

**Can you name these cities?** Name each city described below. Three of the cities are described in two different ways.

1. A great seaport on the Delaware River. *Philadelphia*
2. The city at the falls of the Delaware. *Wilmington*
3. A great seaport on Chesapeake Bay. *Baltimore*
4. The largest city of Pennsylvania. *Philadelphia*
5. The capital of the United States. *Washington*
6. The largest city of Delaware. *Camden*
7. The capital of New Jersey. *Trenton*
8. Philadelphia's neighbor across the Delaware. *Camden*
9. The largest city of Maryland. *Baltimore*

**Special credit work.** Find out all the interesting things you can about the city of Washington, and tell your class about them.





Figure 46. Harvesting lima beans on a truck farm in New Jersey. From spring until fall the great cities in the eastern part of the Middle Atlantic States get fresh vegetables from the neighboring Coastal Plain.



Figure 47. Baskets of tomatoes at a cannery in Delaware. The truck farmers raise such large crops that in addition to supplying fresh vegetables to the city markets they send large quantities to the canneries.

### 3. TWO FARMING REGIONS

You have learned that the fall line forms a natural boundary between the Coastal Plain and the Piedmont Belt. Although the surfaces of these two regions are very different, they are both farming regions. Since there are so many cities and towns in the fall-line belt, what kinds of farming do you think may be important in the Piedmont Belt and the Coastal Plain? In which of these two regions do you think the farms are more like those in New England? Check your answers to these questions as you study this section.

Begin your study by working out the map studies in Group III on page 53.

**Some comparisons.** The Coastal Plain is quite different from New England's coast land. Much of the surface is level, and the soils are fairly deep and almost wholly free from rocks and stones. Over much of the region, however, the soils are sandy. Sandy soils are not well suited to the growth of hay, oats, or wheat, and so neither dairy farming nor the raising of grain is important in this region.

We call the part of the Piedmont Belt in the Middle Atlantic States the Northern

Piedmont. Its surface will remind you of the Hilly Belt of New England, but you will find the soils quite different. The map on pages 10-11 shows that only a small part of the Piedmont Belt was covered by the great ice sheets of long ago. For this reason the soils are deeper than those of New England's Hilly Belt, and not nearly so stony.

**Market gardens.** On both sides of the fall line, near all the larger cities, you will find market gardens like those in New England. They are very small farms, and are near enough to the cities for the products to be sent to market by wagon or motor truck. What do the market gardeners raise?

**Truck farming on the Coastal Plain.** Farther away from the cities there are large *truck farms* on the Coastal Plain. Truck-farm crops, like market-garden crops, are chiefly vegetables. The truck farms, however, are much larger than the market gardens, and they are so far from the cities that the products are sent to market by train or boat.

The sandy soils of the Coastal Plain are better suited to vegetables than to many other crops. For this reason, and because the



many cities and towns farther inland provide large markets for vegetables, truck farming is the most important use of the land in this region of the Middle Atlantic States.

Most of the truck-farm crops are planted as soon as the spring frosts are over, although some are planted even earlier. Many vegetables grow so quickly that two, or even more, crops can be raised in one season. The last crops are usually harvested before the autumn frosts begin. See *Figure 46*.

You would find a great variety of vegetables growing on the truck farms, but you would not find all kinds growing on any one truck farm. Most of the farmers specialize in one or two kinds, choosing those to which their soils are best suited. For this reason many farmers in the same neighborhood raise the same kinds of vegetables. For example, cabbages are a special crop on many Long Island truck farms, melons on many farms in southern New Jersey and Delaware, strawberries on many farms from southern New Jersey to southern Virginia, and tomatoes on many farms on the shores of Chesapeake Bay. On the map find two parts of the Coastal Plain where potatoes are a special crop.

Although the soils of the Coastal Plain are well suited to the growth of vegetables, the truck farmers enrich their land with *fertilizers*. Fertilizers give added plant food to the soils. They are expensive, but by using them the farmers can raise larger and better crops and get higher prices for them.

Along the shores of Delaware Bay and Chesapeake Bay there are many factories where large quantities of tomatoes, peas, sweet corn, and other vegetables from the truck farms are canned each summer. The largest numbers of canneries are in eastern Maryland. Some farmers sell their vegetables to canneries near at hand. Others send them by train or boat to Baltimore, which is the largest canning center. See *Figure 47*.



**Figure 48.** Picking peaches in an orchard near Dover, the capital of Delaware. The fruit-growers send large quantities of peaches and other fruits to the cities.

**Fruit crops.** On the map on page 52 find the peninsula between Chesapeake Bay and Delaware Bay. What states share this peninsula? The part that belongs to Delaware and Maryland is a great orchard section. Peaches, apples, and pears are the leading fruit crops there. See *Figure 48*.

Tree fruits, especially peaches, are easily damaged by frost. Late frosts in the spring hurt the buds, and very cold winter weather may destroy the following season's crop. Therefore, fruits of this kind are grown in largest quantities in places where the danger of frosts in late spring and of very cold weather in winter is not great.

In the winter time bodies of land become colder than bodies of water, and so the air over the water is warmer than the air over the land. The peninsula between Chesapeake Bay and Delaware Bay is especially well suited to fruit-growing because it is so nearly surrounded by water. In late spring and early autumn, when places farther from the water are likely to have frosts, there is less danger of them here because the peninsula is warmed by air from Chesapeake Bay on one side and Delaware Bay on the other.



Courtesy of Norfolk-Portsmouth News Bureau

Figure 49. Virginia peanut-growers using a "peanut-picker." The men feed the dried vines into one end of the machine, and the peanuts come out at the side. What is the man at the left doing?

**The New Jersey cranberry bogs.** On the Coastal Plain of New Jersey there is a section where the sandy soils are so poor that for many years nothing but pine trees grew there. Today hundreds of acres in the "pine barrens," as these lands are called, are cleared of trees and used for cranberry bogs. By turning these waste lands into crop lands the people of New Jersey have made this part of the state the second most important cranberry-growing district of the United States. Where is the leading one?

**Peanut lands of the Coastal Plain.** In southeastern Virginia and on the neighboring part of the Coastal Plain in North Carolina is the largest peanut-growing section of the United States. Peanuts grow on vines, and they belong to the same great plant family as peas. The "nuts" are the seeds, and they grow in pods as peas do. The pods, however, form underground instead of on the part of the vine above the surface. When the time comes to harvest them, the farmers loosen the soil round the roots by plowing, and pull the vines up by hand. Then they stack the vines in the fields and leave them there to dry.

When the pods are thoroughly dry, they are picked from the vines. Some of the peanut-growers use machines such as you see in Figure 49 for picking. Others hire men, women, and even children to do this work.

Large quantities of the peanuts are sold "green" to wholesale dealers who, in turn, sell them either roasted or green to retail dealers. Large quantities are also sold to factories where they are salted, or made into peanut butter or peanut oil. What use is made of peanut butter? Peanut oil is used in cooking and

in the manufacture of soap.

**Mixed farming in the Piedmont Belt.** On the Piedmont farms you will see fields of wheat, corn, and hay, and you will find that nearly every farmer keeps chickens, pigs, horses, and cows. The wheat is a "money crop," raised for sale, but most of the corn and hay is fed to the live stock. When farmers raise many different crops and several kinds of live stock, they are said to carry on *mixed farming*.

Although nearly all the farmers carry on mixed farming, most of them depend on some one crop or kind of live stock to bring them in money. On the map (p. 52) find the part of the Piedmont north of the Potomac River. Notice that this is the part nearest to the large cities of the fall-line belt. In this section you will see more dairy cows than elsewhere in the Piedmont, and you will find that many of the farmers get their living by sending milk and cream to the neighboring cities.

Farther south, from the Potomac River to the James, wheat is the principal money crop on many of the farms. In what state is this section? The kind of wheat that is raised throughout the Piedmont is called *winter wheat*. That is because it is planted in the fall



and harvested in the early summer. Wheat belongs to the great plant family of grasses, most of which are not easily killed by cold weather. That is why the wheat can be planted in the fall.

Along the western margin of the Piedmont Belt in Virginia the farmers specialize in growing apples. This orchard section is just east of the Blue Ridge, which forms the eastern margin of the Appalachian Mountains. Find it on the map. So many apples are grown here that you could walk for miles along the foot of the Blue Ridge passing directly from one orchard into another.

**Tobacco lands.** Turn to the map on page 52, and find the part of the Piedmont Belt in Virginia where tobacco is the leading crop.

This section extends into North Carolina, and is one of the two greatest tobacco-growing districts of the United States. The farmers here raise some corn and wheat, but tobacco is their great money crop.

The soils in this section are suited to the kind of tobacco that is used for pipe-smoking and for cigarettes. Some cigar tobacco is raised, but it is not so good as the kind raised in the Connecticut valley. The tobacco is grown without shade, and some is cured in barns which are heated to help to dry it.

**Market centers of the Piedmont.** The Northern Piedmont has no large cities except those on the fall line, but it has many good-sized towns which have grown up as market centers in the midst of the farming lands. In these towns the farmers sell their products and buy many of the things that they need. In each one you would see many stores. In some you would find a few factories, but these towns are not large manufacturing centers.



Photograph by Underwood & Underwood

**Figure 50.** A view of Richmond from across the James River. Richmond is the capital and largest city of Virginia. Find some factories in the picture. What have you learned about the location of Richmond which suggests how manufacturing started there?

Several towns in the northern part are centers from which dairy products are sent to the cities. Near the Blue Ridge you could visit towns where there are large cold-storage houses in which apples are stored awaiting shipment. South of the James River you would find towns where there are big tobacco warehouses and where many of the people are busy making cigarettes and other manufactures of tobacco.

**Richmond.** On the fall line in Virginia is Richmond. Find this city on the map (p. 49, D 5). Name the river on which it is located, and then study Figure 50.

The location of Richmond at the head of navigation on the James River made it a port of importance in the days when ships were small, and helped it to become a market center for the Piedmont region. The large ocean ships of today cannot go up the James as far as Richmond, but smaller boats still carry much freight to and from the city.



© Atlantic Foto Service

Figure 51. The Boardwalk along the beach at Atlantic City. The Boardwalk is lined with large hotels where thousands of people spend their vacations.

The map shows that several railroads meet in Richmond. They bring farm products from the Piedmont to Richmond and carry back many kinds of manufactured goods. Find some railroad bridges in Figure 50.

You will find many different kinds of factories in Richmond. Among them are factories for the manufacture of tobacco and cigarettes, railroad shops for repairing locomotives and cars, and paper mills. Use your maps to explain why each of these kinds of manufacturing is important here.

**Gathering oysters.** Do you remember the lobstermen along the coast of Maine? Lobsters, oysters, clams, and other small sea animals which have hard shells are called *shellfish*. Along the shores of Long Island Sound, Delaware Bay, and Chesapeake Bay there are hundreds of "oystermen" who get their living by gathering oysters.

Oysters live in warmer waters than lobsters do, and they are found in the largest numbers in shallow bays near the mouths of rivers. The young oysters attach themselves to shells, rocks, or any other hard substance that may be lying on the bottom of the bays. There they grow very slowly, forming "beds," in each one of which there are many thousands

of oysters. As they grow they build hard shells around themselves for protection. The oystermen go out in all kinds of boats to gather the oysters. Those who have small boats use long-handled tongs with metal rakes on the ends. Those who have larger boats use dredges which are run by machinery.

Many of the oystermen are called "oyster farmers" because they raise oysters in the shallow waters of the bays. In recent years oyster farming has become so important that more than half the catch now comes from "planted" oyster beds.

**Marketing oysters.** Along the shores of the bays are oyster houses where the oysters are washed, sorted according to size and quality, and packed for shipment. Some are left in the shells and some are "shucked," or taken out. Thousands of bushels are packed in ice and sent to the city markets close by. Thousands more are loaded in "refrigerator" cars and sent to distant parts of the country.

Some of the oysters are canned instead of being sold fresh. The largest canneries are at Baltimore. What other things are canned in large quantities in that city? There are some Baltimore canneries where you could see the workers canning vegetables in the summer and oysters in the winter. Thus the people in these canneries have work all the year round.

**Coastal playgrounds.** Bordering the coast from Long Island to Cape Charles in Virginia there are long, smooth beaches of sand. During the summer, when it is hot in the cities, the coast is cooled by breezes from the sea. For this reason, and because the sandy beaches make the best of bathing places, thousands of people have summer homes along the coast, and thousands more come for their vacations.

Long Island and the coast of New Jersey have the largest number of summer resorts because they are nearest to the great centers



of population around New York and Philadelphia. Turn to the map on page 49 and find the railroad that runs from Philadelphia straight across New Jersey to the coast. This railroad was built especially to carry people to Atlantic City, the largest summer resort on the Atlantic coast. See Figure 51.

**Hampton Roads and its cities.** Hampton Roads is the name of the body of water that connects the southern end of Chesapeake Bay with the Atlantic Ocean, and it forms one of the best harbors on the Atlantic coast. Find it on the map on page 52 (D-E 5). What two seaports are located here? Study Figure 52 and its legend.

You will see many large ocean freighters moving to and from the wharves of Norfolk and Newport News. Study the exports on the map on page 52 and name the three most important things that are shipped from here to distant lands. The cotton comes from the "cotton belt," which begins in southeastern Virginia and extends southwestward through all the Southern States. From what natural region do the exports of tobacco come?

Turn to the map on page 52, and find the places in southern West Virginia where coal is mined. On the map on page 49 find the railroads which lead eastward from these coal fields to Norfolk and Newport News. The location of Hampton Roads almost directly east from the coal fields makes Norfolk and Newport News the largest coal-exporting ports on the Atlantic coast. Much of the coal goes to other countries, but even more is shipped northward to Philadelphia, New York, and Boston.

Among the imports of Norfolk and Newport News you will find nitrate and potash. These are two of the most important raw materials used in making fertilizer. There are large fertilizer factories in Portsmouth, which adjoins Norfolk, and also in Baltimore. This industry is very important because cotton-

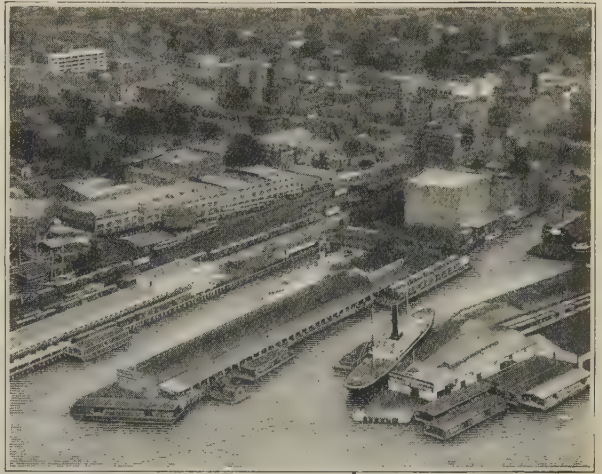


Figure 52. Part of the business district and water front at Norfolk. Ships come to Norfolk and Newport News from distant lands and from other ports of the United States. In what state are these two seaports?

growers and tobacco-growers, as well as truck farmers, use large quantities of fertilizer.

Many other industries of the Hampton Roads cities are also connected with the farming that is carried on close by. For example, there are many factories where boxes and crates for the shipment of vegetables and fruit are manufactured, and many others where peanut butter and peanut oil are made.

**Giving reasons.** Give reasons to explain why

1. There are many market gardens near the fall line.

2. Truck farming is more important than any other kind of farming on the Coastal Plain.

3. Many truck farmers in the same neighborhood raise the same kinds of crops. 857

4. There are more dairy farms in the Piedmont Belt of Pennsylvania and Maryland than farther south. 58

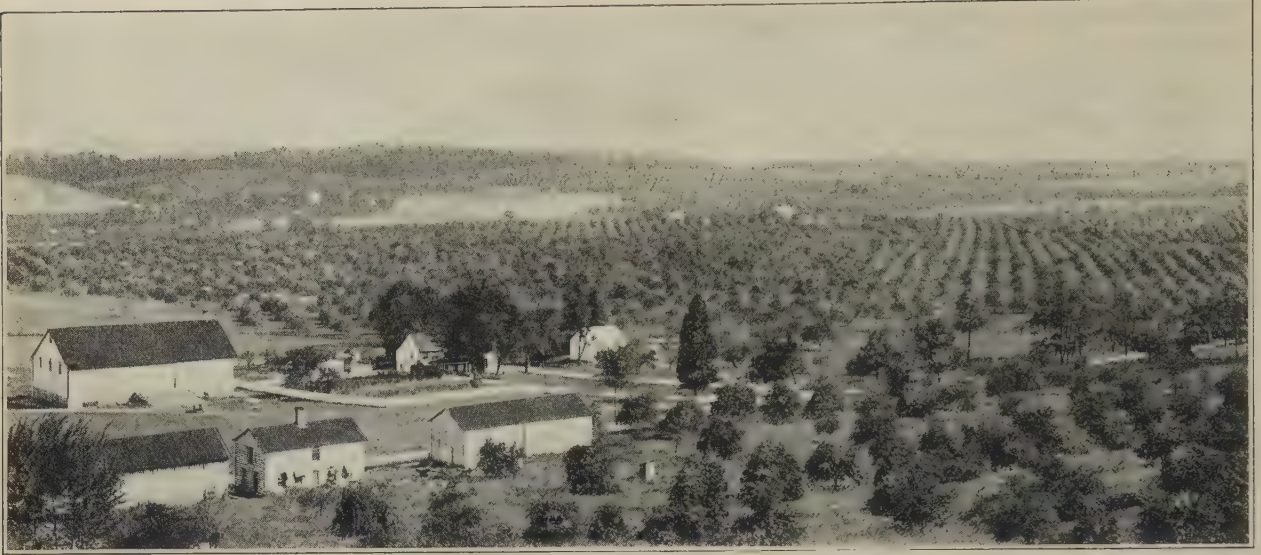
5. The peninsula between Delaware Bay and Chesapeake Bay is a great orchard section.

6. Baltimore is a great canning center.

7. Some of the canneries need workers all the year round. 140

8. Richmond is a great tobacco-manufacturing center. 5

9. Norfolk and Newport News are great coal-exporting ports. 61



United States Department of Agriculture

Figure 53. Apple orchards near Winchester in the Great Valley of Virginia. How is the surface of the valley suited to farming? All through this region you

will see well-kept farmhouses and barns and carefully tended fields and orchards which show what good use the farmers make of their fertile limestone soils.

#### 4. THE APPALACHIAN MOUNTAINS

You already know that the Appalachian Mountains extend southwestward all the way from New England to Alabama. In the Middle Atlantic States they are made up of many long mountain ridges with narrow valleys between them. On the map on page 52 find the Blue Ridge and the Allegheny Front. The Blue Ridge is the easternmost ridge of the Appalachian Mountains, and the Allegheny Front is the westernmost ridge.

Now find the part of the Appalachian Mountains which has the largest number of cities and towns. In what state is this part? Can you suggest any reason why so many more people live there than in any other part of the mountain region? Keep this question in mind as you study about the Appalachian Mountains.

**From Richmond to the Great Valley.** If you take a trip on the railroad that follows the James River inland from Richmond, you will see some of the loveliest scenery in the East. As the train travels westward you can look off to the Blue Ridge with its thick cover of trees. It rises above the Piedmont like a great wooded wall, and if, as often happens,

you see it dimly through a blue haze, you will know how it got its name.

West of Lynchburg you will cross the Blue Ridge, following the narrow, winding valley which the James has cut through it. Beyond the ridge you will come out into a beautiful valley, and your train will stop at Lexington. Find Lexington on the map (p. 49, C5). When you reach there you will be in a part of the Appalachian Mountains which is known as the Appalachian Valley, or the Great Valley.

The Great Valley is not the valley of any one river. Instead, it is made up of many different valleys, with mountain ridges between them, but they are arranged in such a way that it is easy to pass from one to another. Together they form a long, narrow lowland which begins at the Hudson River and extends southwestward all the way to Alabama.

On the map on page 49 find Bethlehem, Pennsylvania (E3). Trace a railroad route from Bethlehem through Harrisburg (D3) to Winchester, Virginia (C4), and from there southwestward through the mountain ranges of Virginia into Tennessee. This railroad



route follows the Great Valley, which forms a natural highway of travel and transportation from north to south through the Appalachian Mountains. As you would expect, there are many cities and towns along this natural highway.

**Farming in the Great Valley.** The Great Valley is one of the richest farming regions in the East. The principal reason for this is that the valley is a lowland in limestone rock, and on the surface the limestone has crumbled into very fertile soil. Most of the farmers carry on mixed farming, raising wheat, corn, hay, and other crops, and keeping live stock.

Many of the farmers, especially in the northern part of the valley, have herds of dairy cows and send milk and cream regularly to the city markets. Many of those farther south raise cattle and pigs which they fatten for market by feeding them corn. Large numbers of these animals are sent by train from the valley to the meat-packing plants in New York, Philadelphia, and Baltimore.

In the part of the valley that extends from northern Virginia into southern Pennsylvania the farmers specialize in growing apples. Find this section on the map on page 52, and study Figure 53.

**Limestone and the manufacture of cement.** The limestone which has given the Great Valley such fertile soils has also helped to make it one of the leading regions of the United States in the manufacture of Portland cement. Perhaps you know that Portland cement is the gray, powderlike material that is mixed with crushed rock and sand to make concrete. Concrete is a very important building material. Molded in blocks it is used for houses, barns, garages, and other small buildings. Together with steel it is used in building skyscrapers, factories, hotels, and other



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Figure 54. Part of a great steel plant at Bethlehem, Pennsylvania. In plants like this, iron is used to make all kinds of fine, strong steel. How many different uses of steel can you name?

large buildings where great strength is needed. Another important use of concrete is for building roads.

Several kinds of rock are ground and mixed to make cement, but the most important kind is limestone. Large quantities of limestone and other rocks are taken from the earth in the Great Valley for use in making cement.

The largest number of cement plants are in the north near Allentown and Bethlehem in Pennsylvania. Find these two cities on the map (p. 49, E3). Notice that this northern section of the Great Valley is the part nearest New York and Philadelphia and the large cities which cluster round them. Explain why these great centers of population provide large markets for cement.

**Iron and steel.** If you should visit the cement-manufacturing section of Pennsylvania, you would find that it is also a center for the manufacture of iron and steel. At Bethlehem you could see the great steel plant shown in Figure 54. Farther south, at Reading, Lebanon, and a place near Harrisburg, you could see others. Locate these places on the map (p. 49, D-E3).



Figure 55. A coal breaker at Scranton, Pennsylvania. In the breakers the coal from the mines is washed, broken up, sorted into lumps of different sizes, and then loaded into coal cars which carry it away. All this work is done by machinery.

The raw material for the manufacture of iron and steel is iron ore. The ore is made up of different rock materials and particles of the metal — that is, the iron. Before the iron can be used it must be separated from the rock materials of the ore. This work is called *smelting*, and it is done in huge towers called *blast furnaces*. You will learn more about smelting on page 70.

Turn to the map on page 52 and see if any iron ore is mined near the cities where you found the blast furnaces. These mines explain why the iron-and-steel industry started in this part of the Great Valley. Today they provide only a small part of the ore used in the iron-and-steel plants. Much of it comes from states farther west, and some of it comes from South America.

Two other minerals are used in the smelting of iron. One is coal, or, more often, coke which is made from coal, and the other is limestone. Thus the limestone of the Great Valley helps in the manufacture of iron and steel. Study the map again and see if you can tell where the iron-and-steel plants get their

coal. It is the nearness of the coal and the limestone that explains why the iron-and-steel industry has continued to grow in this section even though it is now necessary to bring iron ore from a distance.

When you visit the Southern States, you will find a great iron-and-steel center near the southern end of the Great Valley. Between this center and the one in Pennsylvania there are but few places in the Great Valley where iron-and-steel manufacturing is important. One of these places is Roanoke, in Virginia. Locate this city on the map (p. 52, C5).

What mineral products of the mountains and plateau west of Roanoke explain why iron and steel are manufactured here?

**Anthracite mines of eastern Pennsylvania.** Turn to the map on page 52 and find the cities of Scranton and Wilkes-Barre in Pennsylvania (E3). Notice how thickly other cities and towns are clustered round them. Notice also that there is another densely settled section a little farther south. The cities and towns in these two sections are coal-mining centers.

In traveling through these sections you cannot see the coal mines themselves, for they are deep underground. But you can easily tell where they are, for there are signs of coal on every hand. From the train you will see many big mine buildings called "breakers." Figure 55 shows how they look, and the legend tells what they are for.

The coal that is mined in this part of Pennsylvania is *anthracite*, or hard coal. It is the best grade of coal, and when it burns it gives off very little smoke. For that reason many people like to use it to heat their houses. It is



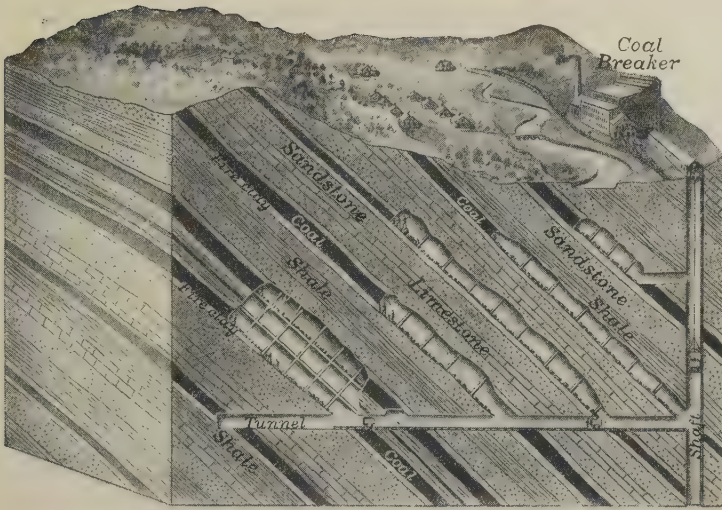


Figure 56. A diagram of an anthracite-coal mine. The coal seams lie between layers of rock. Find the shaft that leads down into the mine, and the tunnel that leads from the shaft to the coal seams. The miners start mining where the tunnels pierce the coal seams, and work upward. The coal drops down into little cars in the tunnel. The carloads of coal are taken to the shaft, hoisted to the surface, and sent to the breaker.



Figure 57. Mining anthracite coal. The miner is using a drill run by electricity to bore a hole in the coal seam. In the hole he will put dynamite to blast out the coal. Thousands of men work in the coal mines deep beneath the ground, and many others work in the breakers.

also used for smelting iron ore. In other parts of Pennsylvania and in many other states there are mines of soft coal, but this section is the only great anthracite-mining center in the United States. Figures 56 and 57 show how the coal is mined.

You saw from the map how many towns and cities have grown up around the coal mines. The mines extend so far underground that they underlie many parts of the cities and towns. People living in houses above them can often feel the earth shake when the miners are blasting the coal.

Scranton is the largest of the coal-mining cities, and Wilkes-Barre is next. On the map on page 49 find the railroads which connect these cities with New York and Philadelphia. These railroads carry thousands of tons of anthracite eastward every month.

**Manufacturing in the coal region.** Nearly all the cities in the anthracite region began as coal-mining towns. Today they are important manufacturing cities as well. You can easily guess that the coal itself is one of

the chief reasons why manufacturing is carried on. Large quantities of anthracite are used to make steam power and steam-electric power for the mills and factories.

At Scranton, Wilkes-Barre, and several other coal-mining centers you would find large silk mills. There is a special reason for this. Most of the work in silk-manufacturing is done by women. In the coal-mining cities the women of the miners' families make good workers in the silk mills. The manufacturers of silk have therefore built factories in these places where they can hire large numbers of women workers.

Many other kinds of factory work are carried on in these cities. Railroad transportation is so important in connection with the shipping of coal that many men work in shops where locomotives and freight cars are repaired. Many others work in factories where wheels, axles, brakes, and other things needed by the railroads are manufactured.

**The "ridge-and-valley" region.** On the map on page 49 find the West Branch of the Susquehanna River in Pennsylvania. South

of this river and west of the Great Valley is the "ridge-and-valley" region of the Appalachian Mountains. It is made up of many long, steep mountain ridges with narrow limestone valleys between them. The westernmost ridge is the Allegheny Front, which is higher than the ridges farther east, and very steep on the eastern side.

Look at the map again, and you will see that between the Great Valley and the Allegheny Front there are hardly any railroads except the main lines that run east and west across the mountains. What rivers do these main lines follow? Notice also that there are few parts of the ridge-and-valley region that have many towns. The rough surface in this part of the mountains has hindered the building of roads and railroads, and has made it a thinly populated region.

**Farming, fruit-growing, and lumbering.** There is room for a few farms in each of the narrow valleys, and there the people raise wheat, corn, and other crops, and keep cattle and pigs. They all carry on mixed farming, but only a few of them produce much more than they need for themselves. Even those who have products for sale often find it hard to market them, for there are no large cities close by and many of the farms are twenty or thirty miles from the nearest railroad.

There is one section of the ridge-and-valley region where the farmers make valuable use of the steep slopes and even the tops of the ridges. This is in northeastern West Virginia, just west of the Great Valley. What do you find on the map on page 52 that suggests what you may see here?

In this part of West Virginia and the neighboring part of Maryland there are big orchards of peach and apple trees on the tops and upper slopes of the mountain ridges. The lower lands between the ridges are used to raise corn and wheat and to pasture live stock, but the principal money crop of the

section is fruit. The orchards are on the tops and upper slopes of the ridges because the higher land is safer from frost than the lower land. Cold air is heavier than warm air. Therefore at night the warm air rises and the cold air sinks down into the valleys. Many a night in the spring and fall there is heavy frost in the valleys, but not a sign of it on the upper slopes of the ridges.

In most parts of the ridge-and-valley region you would find the steep mountain sides covered with bushes and a rather poor second growth of trees. In some places lumbering is carried on, but over large areas the timber is not worth cutting. One reason for this is that many of the mountain sides have been burned over by forest fires.

*A trip to describe.* Imagine that you are going to take a trip by train from Bethlehem, Pennsylvania, to Roanoke, Virginia. Trace the route of your trip on the map on page 49 and point out the places where you expect to see the following things:

1. Cement plants.
2. Iron-and-steel plants.
3. The Schuylkill River.
4. The capitol building of Pennsylvania.
5. The Potomac River.
6. Apple orchards.
7. Dairy farms.
8. The James River.

*Finding "mineral reasons."* You have learned that the minerals in the Appalachian Mountains have much to do with the work of the people. Name one or more minerals which help to explain each of the following facts:

1. The Great Valley has rich soils.
2. The most densely populated part of the Appalachian Mountains is the part in northeastern Pennsylvania.
3. There are many cement plants in the Great Valley.
4. Much iron and steel are manufactured in eastern Pennsylvania.



*Special credit work.* 1. The coal beds are very, very old, and they were formed long before there were any people in North America. Find a book which tells how the coal beds were made and give a talk on the subject to your class. You will find it an interesting story.

2. Try to find someone who has been down in a coal mine, and ask him to tell you what he saw. If you cannot do this, find a book which tells about a visit to a coal mine. Imagine that you have made the visit yourself, and tell your class about it. If you can find pictures of a coal mine, use them to illustrate your talk.

## 5. THE APPALACHIAN PLATEAU

Turn to the map on page 52 and name three of the Middle Atlantic States which have a large share of the Appalachian Plateau. This region is often called a "storehouse of fuel." Study the map, and see if you can explain why.

Thousands of square miles of the plateau are underlain by beds of coal. This is not anthracite, but *bituminous*, or soft, coal. It is the kind that is used most largely for smelting iron ore and for making steam power. It is also used for heating houses.

In parts of the plateau there are layers of sandstone deep beneath the surface which contain oil and gas. We call the oil *petroleum*, which means "rock oil." The gas is *natural gas*, which, like the coal and petroleum, was formed by nature.

Coal, petroleum, and natural gas are the three great fuels which man uses for heat and for making power. Since all three are found in the Appalachian Plateau, what kinds of work do you think are most important there?

The "cut-up" surface of the plateau. The layers of rock that make up the plateau lie almost flat. The region once had a level surface. For long ages the streams have been cutting valleys in it, until today it is a hilly region and some parts are mountainous.



Figure 58. A coal-mining town in a valley in West Virginia. The big mine building is just below the entrance to a tunnel which leads directly into a coal mine. Notice the miners' houses in the valley.

By cutting so deeply into the plateau the streams have made many parts of it hard places to carry on farming or to build roads and railroads. The roughest parts are in the east near the Allegheny Front. Northward and westward the surface becomes less rough, and near the Central Plains it is more like the Piedmont Belt.

**Soft-coal mining.** The "cut-up" surface of the plateau is a hindrance to farming and transportation, but it is a great help in the mining of coal. The coal beds, like the rock layers of the plateau, lie almost flat. As the streams have cut downward, they have cut through the coal beds nearest the surface, laying them bare along the sides of the valleys. For this reason it is not necessary to sink deep shafts into the earth in order to mine the coal. Instead, tunnels are driven directly into the coal beds at the places where they are bared along the valley walls. This makes the mining of soft coal less expensive than the mining of anthracite.

All through the soft-coal fields you could see little mining towns like the one shown in Figure 58. The large mine buildings here are called "tipples" instead of "breakers." They are located in the bottoms of the valleys, over



Figure 59. Barges loaded with coal on the Ohio River. Large quantities of bulky products such as coal, coke, and sand are transported on the Ohio in this way.

the railroad tracks. The coal comes down the hillsides from the tunnel openings to the tipples in little cars. There it is weighed and then tipped into the freight cars below. At some mines the coal is washed and sorted into lumps of different sizes in the tipples before being dumped into the freight cars.

The map on page 52 shows that there are many places where soft coal is mined in the plateau region of Pennsylvania and West Virginia. Pennsylvania, with its anthracite mines and its soft-coal mines, is the leading coal-mining state in our country, and West Virginia is second.

**Marketing coal.** On the map on page 52 find three navigable rivers which flow from the plateau in West Virginia to the Ohio River. On these rivers you would see many barges carrying coal westward to the Central Plains. Thus the navigable rivers are a great help in marketing coal. See *Figure 59*.

Large quantities of coal also go east by train to the cities beyond the Appalachian Mountains. Think how much manufacturing is done in the great centers of population near the coast in New England and the Middle Atlantic States. The manufacturers there depend on the Appalachian Plateau for their coal.

**Oil and gas.** Petroleum and natural gas are obtained from the earth by drilling wells somewhat like those that are drilled for water. When an oil well is drilled, natural gas often comes out first, and oil afterwards. For many years the Appalachian Plateau produced more oil and natural gas than any other part of the United States. Oil and gas, as well as coal, provided abundant fuel for factories, and led to the growth of manufacturing in many places.

There is only just so much oil and gas in the earth, and when they are gone, they are gone forever. Such large quantities have been taken from the Appalachian Plateau that the region now produces less than it once did. Oil and gas fields in other parts of the United States have been discovered, and today only about one thirtieth of all the petroleum produced in the country comes from the Appalachian Plateau. In the production of natural gas, however, this region still leads, providing about one third of the total supply.

**Transporting oil and gas.** Oil and gas are transported in a different way from most products. Some oil is shipped in boats and some in special railroad cars called tank cars, but for the most part both oil and gas are transported through long pipes buried beneath the ground.

Miles and miles of pipe lines lead from the oil and gas fields of the plateau to the larger cities. Both the gas and the oil are used in many different kinds of factories. The gas is especially useful in the manufacture of glass, and it has helped to make this industry important in many of the plateau cities. It is also used to light and heat public buildings and homes.

In Pittsburgh and other cities of the plateau there are large oil refineries where the petroleum is heated in such a way as to produce gasoline, kerosene, and many other lighter oils.





Courtesy of Bylesby Engineering and Management Corporation

Figure 60. An airplane view of Pittsburgh showing "The Point" where the Monongahela and Allegheny rivers join to form the Ohio. The business center of

Pittsburgh is on "The Point," but the city includes land on both sides of each river. Point to the Ohio River in the picture. Why has Pittsburgh so many bridges?

**A great iron-and-steel center.** Turn to the map on page 52 and find a great center of population in western Pennsylvania. This is the greatest iron-and-steel manufacturing district in the United States. Its largest city is Pittsburgh, which stands at the point where the Allegheny River from the north meets the Monongahela River from the south. The joining of these two rivers forms the Ohio River, which flows southwestward to the Mississippi. Find two things on the map on page 49 which prove that these three rivers and their valleys are highways of travel and transportation. You can see that Pittsburgh is a meeting point for both boats and railroad trains. Figure 60 will show you more about the location of Pittsburgh.

If you travel to Pittsburgh by train, you will approach it through one of the valleys. While you are still some distance from the city you will begin to see the great blast furnaces and the steel mills; for all the neighboring cities also manufacture iron and steel. On the railroad tracks near the blast furnaces you will see many freight cars loaded with coke, and many others loaded with reddish-brown iron ore. See Figure 61.

The iron ore that is used in the blast furnaces travels more than a thousand miles before it reaches Pittsburgh. It is mined near the western end of Lake Superior in the states of Minnesota, Wisconsin, and Michigan. Find this section of the United States on the map (pp. 198-199, *H-J1*). From the mines





© Altwater and Brother, Pittsburgh

**Figure 61. Blast furnaces at Pittsburgh.** The furnaces are the round towers. Iron ore is put into them with coke and limestone. As the coke burns, the metal in the ore melts, and the rock materials of the ore mix

with the limestone. The hot liquid iron collects in pools at the bottom of the furnaces, and is drawn off into troughs to cool and harden into "pig" iron. From pig iron stronger iron and all kinds of steel are made.

the iron ore is sent to ports on Lake Superior, where it is loaded on lake freighters called ore boats. These boats bring the ore down Lake Superior and Lake Huron to ports on the southern shore of Lake Erie. There the iron ore is loaded in freight cars and carried to the cities where iron and steel are manufactured. Much of the ore comes to Pittsburgh. There it meets coke and limestone from places nearer at hand and is changed into pig iron.

**Coking coal.** The coke that is used in the blast furnaces is made by heating soft coal in big ovens to drive the gas and certain other things out of it. Coke is the best fuel for the blast furnaces because it is not easily crushed by the weight of the ore and the limestone.

Find Connellsville on the map on page 49 (C3). The coal that is mined in this part of Pennsylvania is especially well suited for making coke. If you should visit Connellsville,

you would see the long lines of coke ovens near the coal mines. Coke is made in many other parts of the plateau, but it is from Connellsville that Pittsburgh gets the greater part of its supply. Explain why.

**Some reasons for the growth of Pittsburgh.** Long before the iron mines near Lake Superior were opened, iron was being mined in the plateau region of Pennsylvania. Since Pittsburgh was a natural meeting place for railroads and river boats, it was the best place in the plateau for bringing together coal and iron ore. This gave Pittsburgh an early start in the smelting and manufacture of iron.

After the Superior iron mines were opened, many of the Pennsylvania iron mines were closed because iron ore could be mined more cheaply in the Superior district. This change in the center of iron mining to the west did not harm Pittsburgh. It takes about two thirds of a ton of coke and about a third of a



ton, of limestone to smelt one ton of iron ore. But iron ore takes up less space in boats and freight cars than coke and limestone do. For this reason it is cheaper to carry the ore to the coke and limestone than to carry the coke and limestone to the ore. Since Pittsburgh has coking coal and limestone near at hand, the iron-and-steel industry has continued to grow, even though the ore must be brought from far away.

Huge quantities of iron and steel are sent from Pittsburgh to other cities east, west, and south, where they are used in manufacturing many different things. Large quantities are also used in the Pittsburgh district itself. You could hardly think of anything made of iron or steel that is not manufactured here. The products range in size and value from big machines to nails and screws. Many other kinds of products are also made here, but iron, steel, and iron-and-steel manufactures are by far the most important.

**Two other iron-and-steel centers.** East of Pittsburgh, near the Allegheny Front, is a smaller iron-and-steel district centering around Johnstown. Find this district on the map (p. 52, C3). The manufactures of this district are much like those of Pittsburgh.

On the map find the city of Wheeling (B3). This city, in the "panhandle" of West Virginia, is the center of the principal iron-and-steel manufacturing district of that state. Another important kind of manufacturing in Wheeling is the making of glass. What fuel found in the plateau is used in this industry?

**Farming in the plateau.** The rougher parts of the plateau near the Allegheny Front are hard places to carry on farming. Farther north and west the land is less rough, and farming is easier. On the map on page 52 find the part of the plateau in New York and northern Pennsylvania. What products there remind you of New England and the Northern Piedmont?

The map shows that this part of the plateau is a great dairying section. Many of the dairy farmers send milk and cream to New York, Buffalo, Pittsburgh, and other large cities every day. Many sell cream to creameries where it is used to make butter, and a few sell milk to factories where cheese is made. The principal cheese-manufacturing district of the plateau is in southwestern New York and the neighboring part of Pennsylvania.

Farther south, in the West Virginia section, less dairying is carried on and more live stock are raised for meat. Here corn is the leading crop and is used chiefly to feed the cattle, pigs, and other live stock.

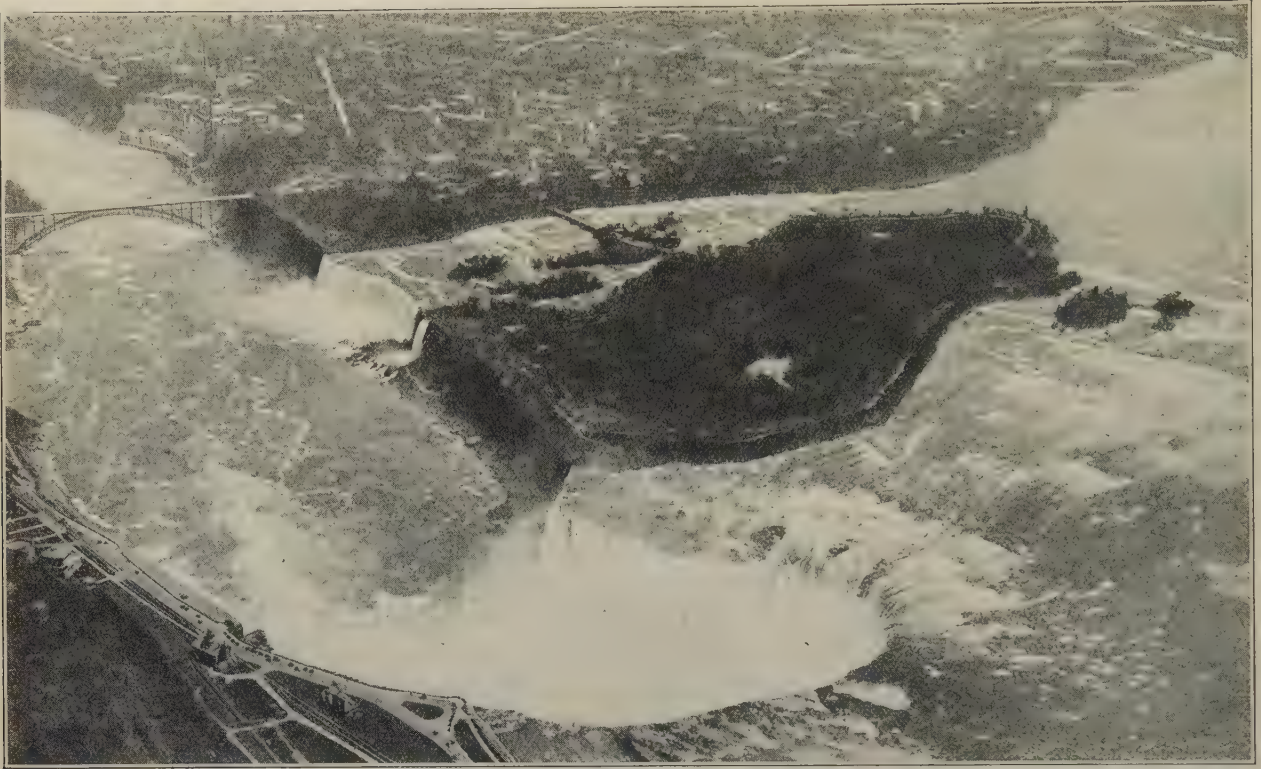
The farming sections of the plateau have few large cities, but they have many good-sized towns which are market centers for the surrounding farm lands. In many of them some manufacturing is carried on. Turn to the map on page 52 and find Binghamton (E2). This city would remind you of some of the cities in New England, for it has large shoe factories.

**Using new words.** During your study of mining and manufacturing in the Appalachian Highlands you have learned the meanings of several new words. Prove that you can use them correctly by giving the right words to fill the blanks in the following sentences.

1. Heating ore to separate the metal from the worthless rock is called smelting.
2. Iron ore is smelted in blast furnaces.
3. Oil which comes from the earth is called Petroleum.
4. Gas which comes from the earth is called natural gas.
5. Heating petroleum to obtain kerosene, gasoline, and other lighter oils is called refining.

**Some things to explain.** 1. Explain why the Appalachian Plateau is called a "storehouse of fuel."

2. Explain how one of the fuels of the plateau has made the Pittsburgh district the greatest iron-and-steel center of the United States.



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**Figure 62. Niagara Falls.** The Niagara River forms part of the boundary between the United States and Canada. The falls nearer you are on the Canadian side of the river, and those farther away are on the

American side. The American Falls are 163 feet high. Electricity made from water power at the falls is sent over wires to Buffalo, Rochester, Syracuse, and other New York cities, and also to cities in Canada.

## 6. THE HUDSON-MOHAWK VALLEY AND THE LAKE PLAIN

You have already learned that the Hudson-Mohawk Valley forms part of the only lowland route from the Atlantic coast through the Appalachian Highlands to the Central Plains. Trace this route again on the map on page 49. Do you think this great highway of travel and transportation is densely populated or not? Why? What kind of work do you think is most important there? Check your answers to these questions as you read this section.

**Buffalo and the Great Lakes.** On the map on page 49 find Buffalo (C2). This is the second largest city in New York State. Notice its location at the eastern end of Lake Erie, and its many railroads. From Buffalo there are three ways to travel westward to the Central Plains. Two of them are by land

along the northern and southern shores of Lake Erie, and the other is by water through the Great Lakes.

Turn to the map on pages 10-11 and name the five Great Lakes. Notice the narrow waterways that connect them. Between Lake Superior and Lake Huron canals have been built which are deep enough to let the big lake freighters through. Between Lake Huron and Lake Erie there is another deep waterway formed by a small lake and two short rivers.

Turn to the map on page 52 and find the Niagara River, which connects Lake Erie with Lake Ontario. About halfway between Buffalo and Lake Ontario the Niagara River tumbles over a high cliff, forming Niagara Falls. Find these falls on the map and study Figure 62.





Courtesy of Buffalo Chamber of Commerce

Figure 63. The entrance to the harbor at Buffalo. The large boat nearest you is a lake freighter, and the one beyond that is a big passenger ship which runs be-

tween Buffalo and Duluth. At the right are great elevators where grain which has come down the lakes by boat is stored, waiting to be sent eastward by train.

Because of Niagara Falls no boats can pass from Lake Erie to Lake Ontario through the Niagara River. A short distance west of the river the Canadian government has built a canal connecting the two lakes, but this canal is not deep enough for the larger lake freighters. Buffalo, then, is the eastern end of navigation for large boats on the lakes, and is a busy port as well as a great railroad center. *See Figure 63.*

If you visit the wharves at Buffalo, you will see ore boats unloading iron ore there. Some of the ore is smelted in blast furnaces near the wharves, and some is sent by train to the iron-and-steel centers farther east and south. Buffalo itself has become an iron-and-steel manufacturing center because it is so well located for receiving iron ore by boat and coal by train. Many of the ore boats go back up the lakes loaded with coal.

Many of the freighters bring wheat, oats, and other grains to Buffalo from the farm lands farther west. Part of the grain goes eastward by train and part goes to mills in Buffalo itself, where it is ground into flour and meal. This city is the second largest flour-milling center in the United States.

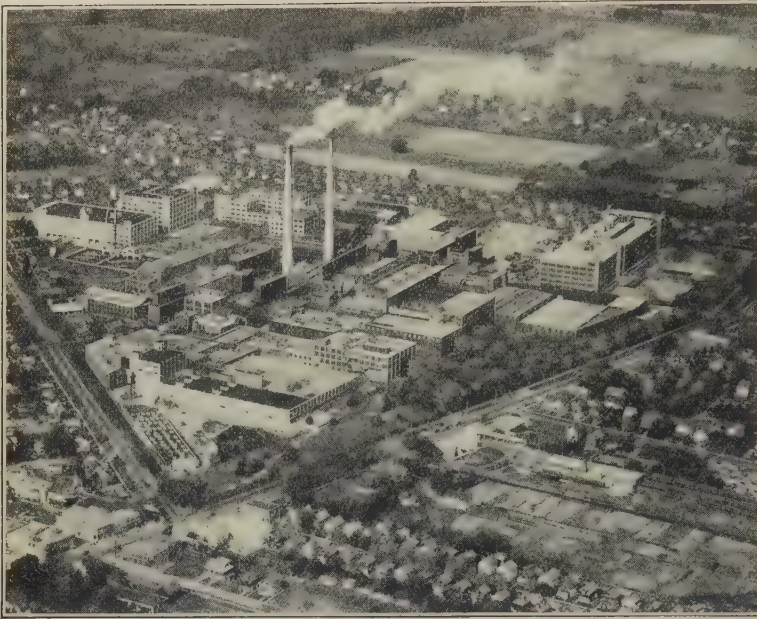
Many other kinds of manufacturing are carried on in Buffalo. Large numbers of

live cattle and hogs come by train from the neighboring farming districts and from Ohio and Indiana, and slaughtering and meat-packing are important. Many of the factories manufacture products for which iron and steel are the principal raw materials. Among the more important manufactures of this kind are automobiles and different kinds of machinery.

Many of the things that come to Buffalo from the west are forwarded by train to New York for export to distant lands. You may think of Buffalo, then, as a gateway through which the products of the interior plains pass on their way to the Atlantic coast, just as New York is a gateway through which they pass to other parts of the world.

**Pennsylvania's lake port.** Turn to the map on page 52 and find the city of Erie (B2). This is Pennsylvania's lake port. It is much smaller than Buffalo, but like that city it receives grain and iron ore by boat, sends coal back up the lakes, and has flour mills, iron-and-steel plants, and many factories for making products of iron and steel.

**The Lake Plain and its fruit.** The Lake Plain, which extends from the eastern end of Lake Ontario to the western end of Lake Erie, is a great fruit-growing region. Apples and



Courtesy of Eastman Kodak Company

**Figure 64.** An airplane view showing the great manufacturing plant at Rochester where cameras, films, and other photographic supplies are made. Rochester is the third largest city in New York State.

peaches are grown in large quantities there, and no other section of the East produces so many grapes. Like the orchard section of the Coastal Plain, the Lake Plain is especially well suited to fruit crops because the nearness of the water lessens the danger of frost in the late spring and early autumn.

**From Buffalo to Albany.** If you take a trip by train from Buffalo to Albany, you will follow what is often called the "canal belt." This is a strip of land bordering the New York Barge Canal. Turn to page 53 and work out the map studies in Group IV.

The Barge Canal is a new canal, but it follows the route of a much older one. Before the days of railroads the people of New York State built the Erie Canal along this route. This canal provided the first means by which farm products from the Central Plains and manufactured goods from the Eastern cities could be carried back and forth between the Great Lakes and the Atlantic coast at small cost.

The canal led to the rapid growth of towns and cities all the way from Buffalo to the Hudson and southward along that river to its mouth. Buffalo, at the western end of this great transportation route, became a busy port, because there the canal boats met the lake boats and exchanged goods and passengers. New York, at the other end, also grew rapidly. Today nearly five sixths of all the people in New York State live in the counties bordering the canal belt and the Hudson River.

When railroads were built, they followed the same route. The trains could carry more goods and move them more quickly than the canal boats, and the time came when the canal was no longer

used. But the great route of transportation which it had opened up was used more and more every year. Today it is the greatest highway from the East to the Central Plains.

The new Barge Canal was built so that bulky products could again be sent across New York State by water. Notice on the map how many cities and towns are located along this famous route. As you pass through them on the train, remember that it was the Erie Canal that gave them their start.

**Canal-belt cities.** The cities at which you will surely stop on your way east from Buffalo are Rochester, Syracuse, Utica, and Schenectady. Locate each of them on the map (p. 49, *D-F2*). You will find that these cities and many smaller ones between them are manufacturing centers. That is chiefly because they are on a great highway of transportation where it is easy to get coal and raw materials and to market manufactured goods.

So many different kinds of things are manufactured in the cities and towns of the canal





Fairchild Aerial Surveys, Inc.

Figure 65. An airplane view of Albany, showing part of the business section. The large building near the river is a railroad office building, with a passenger

station at the farther end. The two bridges across the river are for railroads. What else can you find in the picture which suggests work connected with railroads?

belt that it would take several pages of this book to list them all. You would find, however, that certain places have become well known for special manufactured products.

At Syracuse automobiles and manufactures of iron and steel are the most important. In Utica knit goods are the most valuable manufactures. In Schenectady the two greatest industries are the building of locomotives and the manufacture of all kinds of electrical goods. Rochester's leading manufactures are cameras and photographic supplies, and clothing. See Figure 64.

**Albany and Troy.** When you reach Albany, you will be in the capital city of New York State. Albany carries on some manufacturing, but it is much more important as a railroad center. Turn to the map on page 49 and trace the railroad routes that run north,

east, south, and west from Albany. Over these railroads a great variety of things come to Albany: cloth, shoes, and other manufactured goods from New England; lumber, wood pulp, and paper from the Adirondack region; grain, meat, and cattle from the West; and manufactured goods and imported raw materials from New York City. Most of these things *pass through* Albany on their way to the places where they are to be used. Here, where the railroad lines meet, the freight cars are shifted from one line to another. That explains why railroad work is so important in New York's capital city. See Figure 65.

On the map on page 52 find Troy (F2). Its location near the point where the Mohawk River joins the Hudson has made Troy an important manufacturing city. Its leading manufactures are men's collars and shirts.





Figure 66. Hauling logs out of the forest in the Adirondacks. Here, as in New England, trees are cut for lumber and for pulp wood. Much of the lumbering is done in the winter. Can you tell why?

**Northward to the Adirondacks.** From Albany you might travel northward along the Hudson River and the lowland bordering Lake Champlain. Find this lake on the map. Off to the right, across the lake and its lowland, you would see the rounded tops of the Green Mountains of Vermont. To the left, and nearer you, you would see the thickly wooded Adirondacks.

These mountains are New York's playground. The central part of them is a great state park, and is kept as a vacation land for the people. Here thousands of people spend their summer vacations, fishing and bathing in the lakes and streams, tramping through the woods, and camping among the mountains. Thousands more come in winter to enjoy the skating, skiing, snowshoeing, and tobogganing.

The forests of the Adirondacks are much like those of New England, and lumbering is an important kind of work. What did you learn in the section on Albany which tells the kind of mills you would find in the Adirondacks? Study the map on page 52 and find a place where iron ore is mined in this region.

**Southward to New York City.** If you are going south from Albany, you will enjoy making the trip on one of the big passenger steamers that run down the Hudson to New York. Not far below Albany you will see the Catskill Mountains off to your right. These mountains are a part of the Appalachian Plateau which has been so deeply carved by streams that it is as rough as the Adirondacks. Find the Catskills on the map.

As you steam down the river you will see big cement plants at various places on the banks. You will also see plants where bricks are made. On the river you may see long lines of barges loaded with cement or bricks being towed downstream by steam tugboats. The Hudson valley is a convenient place to make these building materials, because great quantities of them are needed in New York and other cities near the mouth of the river.

When you reach Newburgh, you will enter the narrow valley which the Hudson has cut through the Appalachian Highlands. For about twenty miles you will see the mountains rising steeply on both sides of the river.

South of the highlands you will come out into a much broader part of the river, and it will not be long before the smoky haze in the distance will tell you that you are nearing New York. Your trip will end at a pier on the western side of Manhattan Island.

**Can you name these places?** Try to name each place described below. If you have trouble with any of them, use your maps.

1. The capital of New York State. *Albany*
2. New York's great lake port. *Rochester*
3. New York's great seaport. *New York*
4. The mountains of northern New York. *Adirondacks*
5. Two of the Great Lakes that border New York State. *One is Ontario*
6. The mountains that are part of the Appalachian Plateau. *Catskill*
7. The river that reaches the ocean at New York City. *Hudson*



**Naming cities.** Twelve important cities of the Middle Atlantic States are described below. Name each one.

1. The largest city in the United States. *New York*
2. The seaport of Pennsylvania. *Philadelphia*
3. The seaport of Maryland. *Baltimore*
4. The greatest iron-and-steel manufacturing center in the United States. *Penn*
5. New York's gateway city to Lake Erie. *Cleveland*
6. The capital of the United States. *Washington*
7. A city well known for the manufacture of photographic supplies. *Eastman*
8. Two important seaports of Virginia. *Richmond*
9. Two leading anthracite-mining cities. *Pittsburgh*
10. The leading silk-manufacturing city in the United States. *Pottsville Pa.*

**Matching states and work.** Each kind of work listed in the left column below is especially important in one of the states listed in the right column. Match each kind of work with the correct state.

|                        |                |
|------------------------|----------------|
| mining anthracite      | West Virginia  |
| canning oysters = 6    | New York = 7   |
| growing peaches        | Virginia       |
| raising peanuts        | Maryland = 6   |
| growing cranberries    | Pennsylvania   |
| mining soft coal X = 3 | Delaware X = 2 |
| raising grapes = 7     | New Jersey     |

**Finding endings.** In the column at the right find the correct ending for each of the sentences begun in the column at the left.

- |                       |                        |
|-----------------------|------------------------|
| 1. Truck crops are    | shellfish.             |
| 2. Milk and cream are | fruits.                |
| 3. Coal and oil are   | mostly vegetables.     |
| 4. Orchard crops are  | fuels.                 |
| 5. Oysters are        | crops raised for sale. |
| 6. Money crops are    | dairy products.        |

**Lists to complete.** Something has been omitted from each of the following lists. Complete each list.

1. Ocean gateways of the Middle Atlantic States:

- (a) New York (b) Norfolk (c) Baltimore  
(d) Newport News (e) *Richmond*

2. Fuels found in the Appalachian Plateau:

- (a) natural gas (b) petroleum (c) *iron*

3. Materials needed for the manufacture of iron and steel:

- (a) coking coal (b) limestone (c) *iron*

4. Important products of the Northern Piedmont:

- (a) dairy products (b) apples (c) *iron*

5. Important products of the Coastal Plain:

- (a) fruit (b) peanuts (c) *iron*

**Making choices.** Choose the correct ending for each sentence below:

1. The Hudson-Mohawk Lowland is an important highway of travel and transportation because it

is a manufacturing belt.

✓ provides a lowland route to the Central Plains.  
has good farming land.

2. The Great Valley is a farming region because it

is a highway of travel and transportation.  
extends from the Hudson River to Alabama.  
has level land and fertile soils.

3. The farms of the Piedmont Belt and the Coastal Plain are a great help to the cities of the fall-line belt because they

provide raw materials for manufacturing.  
provide large quantities of food  
provide work for many people.

4. The rivers of the Piedmont Belt are valuable because they

✓ provide navigable waterways.  
flow eastward to the Atlantic Ocean.  
provide power for manufacturing.

5. The most densely populated part of the Appalachian Highlands is in northeastern Pennsylvania because

✓ it has many railroads.  
it is a great coal-mining region.  
it is a silk-manufacturing region.

6. Pittsburgh is a great iron-and-steel center because

✓ Iron ore is mined close by.  
there are oil fields close by.  
coking coal is mined close by.



Figure 67. A cotton plantation in Mississippi. The picture was taken in the picking season, after the bolls, or seed pods, had burst, showing the fluffy white fiber.

The larger plantations cover several thousand acres, but most of the cotton is raised on small farms. Cotton is the great money crop in the Southern States.

#### IV. THE SOUTHERN STATES

**Foreword.** You have learned that New England and the Middle Atlantic States are two of the greatest manufacturing sections of our country. Now you are going to visit the South, which is one of the two greatest farming sections. Another name for farming is *agriculture*, and so we say that the South is a great agricultural section. In the Southern States as a whole at least half the people who work are farmers, and their crops are worth far more than the crops raised by all the farmers in New England and the Middle Atlantic States.

You will find that the people of the South do many other kinds of work besides farming, and that many of the Southern cities are manu-

facturing centers. As you read about the Southern States be on the lookout for answers to the following questions.

1. What kinds of farming do the people of the South carry on, and why?
2. What other kinds of work do they do, and why?

Begin your study by doing the map work suggested below.

**Map work.** Add the boundaries and names of the Southern States to the map of the United States which you are making.

When you have finished this work, turn to page 89. Read the foreword on that page, and work out the map studies in Group I.



## 1. THE COTTON BELT

Among all the manufactures of the United States cotton goods are one of the most important, and of all the products exported to distant lands raw cotton is by far the most valuable. In New England and the Middle Atlantic States you visited many cities where cotton is manufactured, and several seaports from which it is exported. In the South, where the cotton is raised, the people call it the "king of crops." When you have finished studying this section, you will understand why.

**Where cotton is raised.** The maps have shown you that there are large stretches of lowland plains in the Southern States. Over the greater part of these plains and the bordering uplands cotton is the most valuable crop. This cotton-growing section of the South is called the *cotton belt*, and it produces more than half of all the cotton grown in the world. Find the cotton belt on Figure 196 (page 201) and notice that it is almost wholly in the Southern States. In order to understand the reason for this you need to know something about the climate of the South. Before you read the next paragraph, study the explanations on page 201.

Compare Figure 196 with Figure 195, and you will see that the northern boundary of the cotton belt follows closely the line along which the frostless season lasts two hundred days, or nearly seven months. North of that line the growing season is less than two hundred days, and is too short for cotton.

Compare Figure 196 with Figure 194, and you will see that the cotton belt does not extend much to the west of the twenty-inch rainfall line. That is because lands with less than twenty inches of rainfall are usually too dry for cotton.

**Cotton plantations.** The larger farms where cotton is raised are called *plantations*. Figure 67 shows how they look. If you should visit a plantation like this, you would find that the



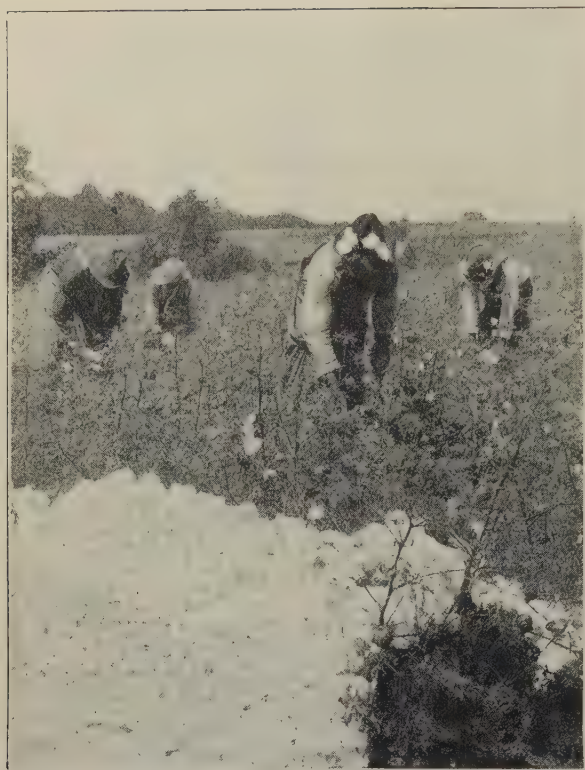
Courtesy of Extension Service, A. P. I., Auburn, Alabama

Figure 68. Negroes chopping out cotton. "Chopping out" means hoeing up some of the plants so that the rest will have room to grow. The man at the right in the picture is driving a machine called a "cultivator" to loosen the soil and keep down the weeds.

owner, or planter, employs negro "croppers" to work for him. To each one he rents a portion of his land, and gives him a mule, tools, seed, and fertilizer. The cropper uses about half his land for cotton. On the rest he raises corn and a few other crops, partly for food and partly to feed his cow, his pigs, and his chickens. Cotton is his money crop. Part of it goes to the planter in payment for the use of the land.

Many of the plantation owners rent farm lands to negroes and white men who own their tools and farm animals. The farmers pay for the use of the land by giving the owner part of the corn and cotton which they raise. Besides the large plantations in the cotton belt, there are many small farms. Some are owned by negroes, but many more are owned by white men.

**Cotton-growing.** Because cotton grows slowly, it takes more than half a year to raise each crop. The farmers plant the seeds as soon as all danger of frost is past. Figure 68 shows what you will see in the cotton fields after the plants have grown to be a few inches high.



U. S. Department of Agriculture

Figure 69. Picking cotton on a Southern farm. The cotton fields are picked over several times, for the bolls do not open all at once. October and November are the big picking months, but the last of the crop is often harvested as late as December or January.

In June, July, and August the blossoms begin to come out. By this time the plants are two or three feet high, with dark-green leaves. As the blossoms wither and fall off, the seed pods, or *bolls*, begin to form in their place. In the late summer the bolls begin to burst open, showing the snowy fibers, or *lint* in which the seeds are buried.

As soon as enough of the bolls are open, the cotton-picking begins. Into the fields go men, women, and children, — in fact, everyone who can be spared from other work. Day after day they move back and forth across the fields, picking the cotton from the bolls. See Figure 69.

**Ginning and baling the cotton.** Before any use can be made of the cotton, the seeds must be removed from the lint, or fibers. This is

done by machines called cotton gins. All through the cotton belt there are gins within easy reach of the farms, and during the picking season they are busy places. Every day many wagonloads of cotton arrive from the fields, and many bales of cotton are made ready to be shipped away. See Figure 70.

**Cottonseed products.** From the cotton that goes to make a single 500-pound bale, about one thousand pounds of cottonseed are obtained. The seed is a valuable part of the cotton crop. In many cities and towns of the cotton belt there are mills where the cotton seeds are first hulled and then crushed between heavy rollers to press out the oil. The cottonseed oil is used for cooking, for salad oil, and for making substitutes for lard and butter. It is also used in the manufacture of soap.

The cottonseed "cake" that is left after the oil is pressed from the seeds is ground into meal and used for cattle feed and fertilizer. The hulls are also used for feed and fertilizer. Large quantities of cottonseed cake are exported from the South to the dairying countries of Europe.

**Shipping cotton.** You already know that much of the cotton goes to mills in the North, and that some of it goes to Northern ports for shipment to distant lands. The Southern ports, however, export much more cotton than those of the North. Turn to the maps on pages 88 and 96 and name three seaports on the Atlantic coast and three on the Gulf coast from which cotton is sent to Europe. Of all these seaports, Galveston, in Texas, exports by far the most cotton.

**Southern cotton mills.** In spite of the large quantities of cotton that are sent away, more than a third of the cotton crop is used in mills in the South itself. About three fourths of all the Southern cotton mills are in the Piedmont Belt. Turn to the map on page 88 and notice how many cities and towns there are in this region. Nearly all of them have cotton mills.





Courtesy of Extension Service, A. P. I., Auburn, Alabama

Figure 70. A cotton gin. Each wagon stops in the open space under the building, and the cotton is drawn up into the gin through a large pipe by suction. After

the seeds have been removed by the gin, the fiber is pressed into bundles called bales. Each bale is covered with burlap and bound with iron bands.

**An enemy of cotton.** The cotton plant has an enemy which causes millions of dollars' worth of damage to the cotton crop every year. This enemy is the cotton-boll weevil.

The cotton-boll weevils are beetles about a quarter of an inch long which puncture the cotton buds, or "squares," and also the young bolls, and lay their eggs in them. The baby beetles that hatch from the eggs are somewhat like tiny worms. They cause the squares and young bolls to fall off the cotton plants, and spoil the fiber in the older bolls.

These destructive insects came into Texas from Mexico in 1892. Year by year they have spread northward until now they are found in all parts of the cotton belt. The cotton-growers have tried all kinds of ways to stop them, but they have not yet succeeded.

**A cotton exhibit.** You will enjoy making a cotton exhibit to show to other pupils in your school. Try to get some cotton bolls and some ginned cotton, and collect samples of manufac-

tured cotton goods. Mount them on a card and be prepared to give a talk about cotton when you exhibit them.

If you live outside the South, you can get some cotton bolls by writing to school children in one of the cotton-belt cities. When you write to them, ask if there is any product of your home region that they would like to have you send in return.

**Mixed farming in the cotton belt.** Before the coming of the boll weevil many of the farmers of the South raised little but cotton and corn, and cotton was their only money crop. This was unfortunate for two reasons. In the first place, in years when the price of cotton was low everyone was poor. In the second place, growing cotton and corn on the same land year after year made the soils poorer. As the soils became "worn out," it was necessary to enrich them with fertilizers, and this added to the cost of raising the crops. Today the cotton-growers in the eastern part



U. S. Department of Agriculture

**Figure 71.** A field of corn and velvet beans. The beans climb the cornstalks, and their leaves almost hide the corn. After the corn is picked, cattle are turned into the field, to feed on the cornstalks and the beans.

of the cotton belt spend more money for fertilizers than any other group of farmers in the United States.

In recent years the boll weevil has given the farmers so much trouble that many of them now carry on mixed farming. They plant part of their land to cotton, part to corn, and part to other crops. Cotton is still their principal money crop. Corn is raised partly for food and partly for feed for beef cattle, hogs, and other live stock. Many other crops are also raised to feed live stock.

By using their land in this way the farmers have live stock as well as cotton for sale. This is a great help, especially in years when the cotton crop is smaller than usual. Furthermore, using the soil for a variety of crops keeps it in better condition.

**Crops for live stock.** Of all the crops grown to feed live stock in the cotton belt, corn is the most important. It is fed to beef cattle, mules, and horses, and is also used to fatten hogs.

Many of the Southern farmers raise pea-

nuts to feed their live stock. Some of the farmers turn their hogs into the peanut fields and let them eat the vines and the nuts. Others gather the nuts and sell them, and feed the vines to cattle and hogs. Still others harvest the peanut crop and use it as Northern farmers use hay. Peanuts are rich in oil and are especially good for fattening hogs.

Another important Southern crop is sweet potatoes. They are raised chiefly for food, but many farmers use them to feed and fatten hogs.

Other crops that are grown for live stock are velvet beans and cowpeas. Most of the pea vines are cut for hay with mowing machines, and they make excellent feed for cattle. Some farmers harvest the peas and then turn their hogs into the fields to eat the vines. Figure 71 will tell you something interesting about velvet beans.

The South is not a great dairying section, but most of the farmers keep cows to supply their own families with milk. Near the larger cities, however, there are dairy farms much like those in the North.

**Other crops of the cotton belt.** The parts of the cotton belt where you would find the farmers raising peanuts and velvet beans are the parts in the Coastal Plain. In the Piedmont Belt, which is higher and somewhat cooler, wheat and oats are grown in addition to cotton and corn.

In the drier part of the cotton belt, in western Texas and the neighboring part of Oklahoma, you would find some of the farmers raising wheat, but very few of them raising corn. Wheat can be grown in regions of light rainfall, but corn needs too much moisture in summer to grow well in this section. Its place is taken by crops known as *sorghums*. Of these, Kafir corn is the one raised in largest quantities. The sorghums need even less moisture than wheat, and they make excellent feed for cattle. Later you will learn more about wheat and cattle in Texas and Oklahoma.



**Two Southern tree crops.** Turn to the map on page 88 and find a part of Georgia where peaches are an important crop. Peaches are grown in nearly all parts of the South, but Georgia raises far more than any other Southern state. Think what you have learned about frost and peach trees, and explain why the South is well suited to this fruit crop.

If you have ever eaten pecans, you know that they are one of the best kinds of nuts. Pecan trees grow wild in the South, but the pecans that we buy in the stores come from cultivated groves. Pecan-growing is one of the newer kinds of farming in the South, and the groves are found in many places from South Carolina to Texas.

**Choices to make.** 1. From the four reasons given below, choose the two which best explain why the cotton belt is almost wholly in the Southern States.

- (1) Because the growing season is long.
- (2) Because there is much level land.
- (3) Because cotton is a money crop.
- (4) Because there is plenty of rain.

2. From the list of crops below, choose those which the cotton-belt farmers raise chiefly to feed live stock.

|           |              |                |
|-----------|--------------|----------------|
| corn {    | Kafir corn { | pecans         |
| cotton    | peaches      | ✓ velvet beans |
| cowpeas ✓ | peanuts }    | wheat          |

**Telling about cotton.** Imagine that you are a Southern cotton-grower, entertaining a visitor from the North. Here are some questions that he is likely to ask you. Answer each one clearly.

1. When do you plant your cotton?
2. What do you do to make it grow well?
3. What harm does the boll weevil do?
4. When do you pick the cotton?
5. Why does the picking season last so long?
6. What does cotton ginning mean?
7. What becomes of all the cottonseed?
8. What becomes of the baled cotton?
9. What port in the Southern States ships the most cotton?

## 2. WORK IN THE SOUTHERN FORESTS

Except for the drier parts of Texas and Oklahoma, most of the South was once covered with thick forests. Today much of the original forest is gone, and in its place are farm lands and forests of second growth. Yet in spite of all the land that has been cleared for farming and all the trees that have been cut for lumber, splendid forests still cover large tracts of land, and forest work is very important in many places. Do you know what the two leading forest products of the South are?

**Southern forests.** On Figure 197 (p. 202) find the part of the Southern States where the trees are mostly hardwoods. Notice that the trees of the Piedmont Belt are mixed hardwoods and softwoods, while those of the eastern part of the Coastal Plain are mostly softwoods. The softwood trees of the South are largely yellow pines, and so the forests are called the Southern pine forests. In the swampy lands along the rivers there are many cypress trees. The pines and the cypresses are both very valuable for lumber.

The largest stretches of softwood forests left in the South are on the Gulf Coastal Plain, and this is one of the two greatest lumbering regions of the United States. The other is in the mountains of the Northwest, in the states bordering the Pacific coast. Washington and Oregon, in the Northwest, and Mississippi and Louisiana, in the South, are the leading lumber-producing states.

**Lumbering in the Coastal Plain.** Lumbering is easy in the pine forests of the Coastal Plain because the surface is so level that railroads can be built wherever they are needed to carry the logs to the sawmills. If you visit one of the lumber camps, you will probably follow a "logging" railroad into the forest. Along the way you will see many acres of land where all the larger trees have been cut down. When you reach the place where the



Courtesy of Southern Pine Association

**Figure 72.** A lumber-skidder in a Southern pine forest. The lumbermen cut down the trees on both sides of the railroad, and the skidder drags the logs to the railroad track by means of strong steel ropes.

lumbermen are at work, you are likely to see a big machine called a "skidder" on the railroad track. Figure 72 shows what the skidder does. The logs are piled beside the railroad track and later are taken to the sawmills on flat cars.

Lumbering in the swamps where the cypress trees grow is not so easy, because the water rises several feet in the wet seasons. The trees are cut when the water is low. In the places where there are no railroads the logs are bound together in rafts and towed to the sawmills when the water is high. There would be much less lumbering in these swampy places if it were not for the fact that cypress wood makes excellent shingles, and large quantities of it are needed for that purpose.

**Sawmills and lumber ports.** Throughout the lumbering sections of the South there are hundreds of sawmills where the logs are sawed into boards of different lengths and thickness. Lumber is measured by the *board foot*, which is one foot long, one foot wide, and one inch thick. The Southern sawmills turn out hundreds of millions of board feet of lumber every year. See Figure 73.

From the sawmills much lumber is sent by



Courtesy of Southern Pine Association

**Figure 73.** A Southern sawmill. Trains of flat cars bring the logs from the forests, and the cars are tipped up to roll the logs into the pond. There they float until they are taken into the sawmill.

train to other parts of the country, and much goes to the Southern ports for export by boat. Instead of being exported from a few large ports, as cotton is, lumber is exported from many ports, both large and small.

**Mountain forests.** In the Appalachian Mountains of the South there are softwood forests on the upper slopes, and hardwood forests on the lower slopes. Lumbering has been carried on for many years in the mountains, and in some places the lumbermen have cut down so many of the trees that the slopes have been left bare.

In regions of this kind many of the slopes are too steep for farming. The best way to use such slopes is to keep forests growing on them to provide a supply of timber for lumber. If the lumbermen of our country continue to cut down the trees as carelessly as they have in the past, the time will come when there will be little timber left. To keep the forests from being destroyed the United States Government has bought many tracts of land in the mountainous parts of the country, and is taking care of the forests. By far the greatest number of national forests is in the mountains of the West, but there are sev-





# SOUTHERN STATES EASTERN SECTION

POLITICAL MAP SHOWING RAILROADS

- Scale of statute miles
- 0 25 50 100 150 200 250
- ★ State capitals
- Chief seaports
- Principal railroads
- Navigable rivers
- Canals
- Lowlands and interior plains
- Uplands and plateaus
- Old, worn-down mountains
- Boundaries of natural regions





Photograph by E. S. Shipp

Figure 74. Gathering resin. The trees which provide the resin are long-leaf pines. Notice the V-shaped gashes which the men have cut in the trees to make the resin flow. The cuts are made every few days during the turpentine season, which begins in the early spring and ends in the late fall.

eral in the mountains of North Carolina and the bordering states, and a few at other places in the South.

In the national forests the government is replanting some of the bare, cut-over slopes with young trees, and is doing everything possible to prevent forest fires. The government allows only the older trees to be cut down, leaving the younger ones to grow. In this way the government plans to use the national forests to grow "crops" of trees which can be cut for lumber.

**Turpentine from Southern pines.** Figure 74 shows another kind of work that is done in the Southern pine forests. The cups that are fastened to the tree trunks have been put there to catch the resin. The resin is a thick, sticky substance which oozes out of the pine trees when they are cut or injured in any way. It is the raw material from which turpentine is made, and is often spoken of as crude, or raw, turpentine.

The resin is gathered in buckets from the cups, poured into barrels, and taken to a building in which there is a "still." In the still it is heated in such a way that the turpentine is separated from it. After this has been done the turpentine is drawn off into barrels and is ready for shipment. The most important use of turpentine is in mixing paints. Do you know of any other ways in which it is used?

The substance that remains after the turpentine has been removed is known as rosin, and its value is nearly as great as that of the turpentine. It is used in making soaps and varnishes

and in many other ways.

#### *Can you answer these forest questions?*

1. What are the two leading forest products of New England and the Adirondack Mountains?
2. What are the two leading products of the Southern forests?
3. Why is it easy to carry on lumbering in the forests of the Coastal Plain?
4. Why do Southern lumbermen take the trouble to cut down trees in the swamps?
5. What do the people of the South do with the lumber which they do not need themselves?
6. Why has the United States Government set aside large tracts of land as national forests?
7. What does the government do to keep the forests from being destroyed?
8. What kind of land should be used to grow crops of timber, and why?

**Special credit work.** Find out all you can about the importance of "naval stores" in the early history of shipbuilding in this country. Prepare a report on this subject to read to your class.



### 3. SOUTHERN OIL FIELDS

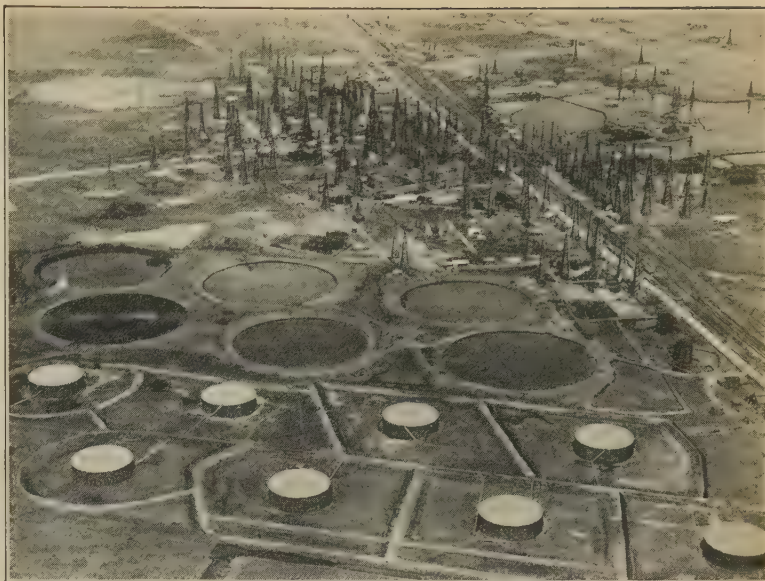
The first region of the United States to produce petroleum was the northern part of the Appalachian Plateau. Later oil was discovered in the Central Plains, in the South, and in the West. Today our country produces far more oil than any other country in the world. About half of all our petroleum comes from the four Southern states west of the Mississippi River. What states are they?

Have you ever stopped to think how useful petroleum is? Before you read about the Southern oil fields, make as long a list as you can of the uses of fuel oil, gasoline, and kerosene.

**Three oil fields.** There are three great oil fields in the South.

As you read about each one, find it on the map on page 96. One is the Gulf field, which extends along the Gulf coast from Matagorda Bay in Texas to Atchafalaya Bay in Louisiana. The second is in southern Arkansas and northwestern Louisiana, and extends into Texas. The third and most important is in the Central Plains region of Texas and Oklahoma. This field stretches from central Texas northward across Oklahoma into the neighboring state of Kansas, and is called the mid-continent oil field. This field also produces much natural gas which is used for heating and other purposes. Figure 75 shows what you will see in the oil fields. Study the picture and its legend.

**How petroleum is obtained.** You will remember that petroleum is found in layers of sandstone rock beneath the surface of the earth. It is a thick, brownish-black liquid, and it is obtained by drilling wells from which it can be pumped much like water. Drilling an oil well means boring a deep hole down into the sandstone which contains the petro-



Courtesy of Chamber of Commerce, Beaumont, Texas

**Figure 75.** Looking down on an oil field in Texas from an airplane. The framework towers are called *derricks*, and under each one is an oil well. Notice that the wells are close together. The big round tanks nearer you are for storing the petroleum pumped from the wells.

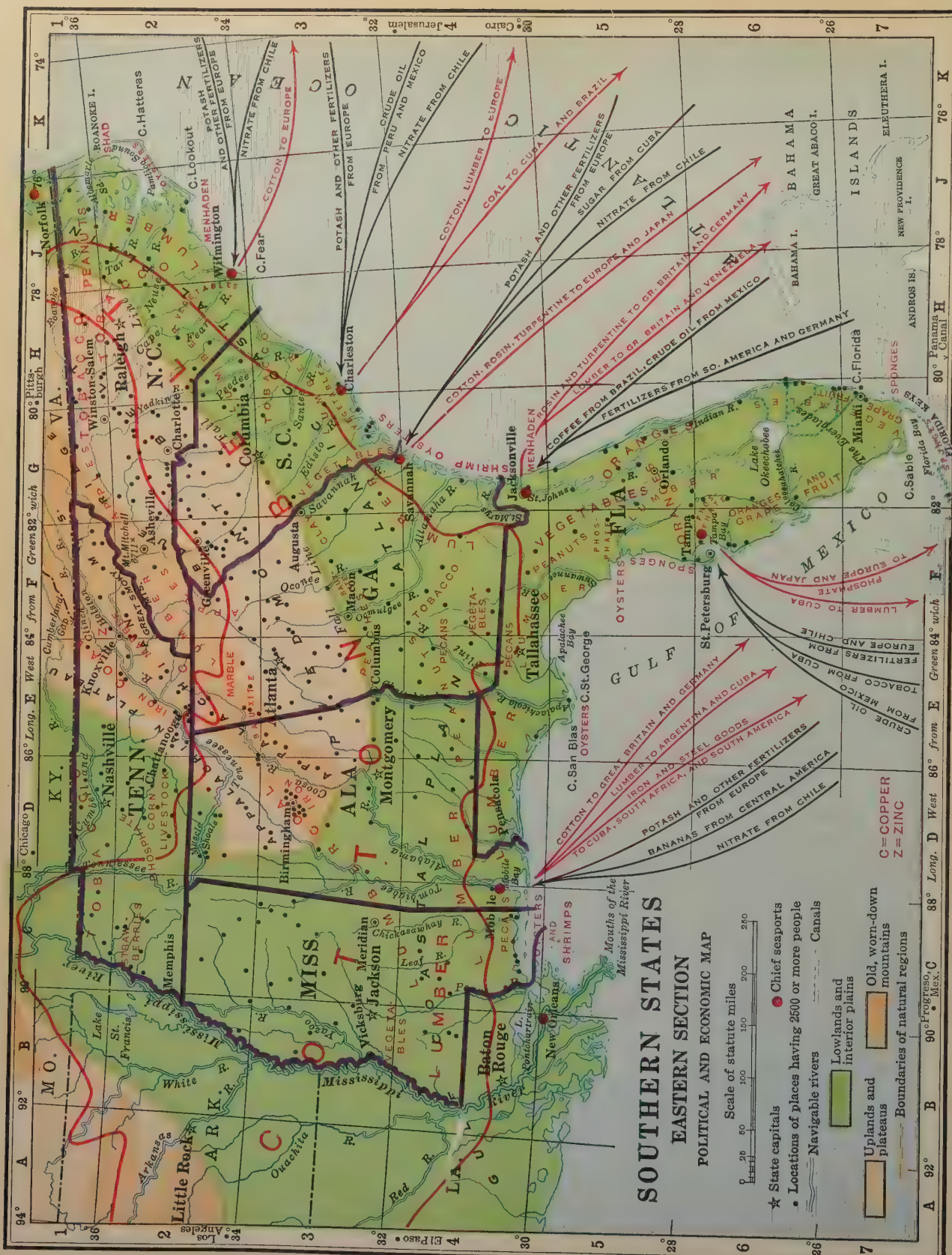
leum. This work is done by sharp, heavy drilling tools run by machinery. The derricks such as are shown in Figure 75 are built to support the tools.

When the sandstone layer containing the oil is pierced, the oil rises in the well. Sometimes it shoots into the air like a great fountain. Such a well is called a "gusher." In many of the wells the oil rises to the surface more slowly and flows out in a steady stream. In others it has to be pumped out by special pumping machinery. Most of the gushers and flowing wells stop after a while, and in the end nearly all the wells are pumped.

In Figure 75 you see some of the big round steel tanks in which the crude oil is stored as it comes from the wells. Each tank stands in a shallow pit which is bordered by a wall of earth. If the tank leaks, the pit holds the oil. If the tank is struck by lightning and the oil catches fire, the wall helps to keep the burning oil from spreading and setting fire to the other tanks.

*Turn over to page 90.*







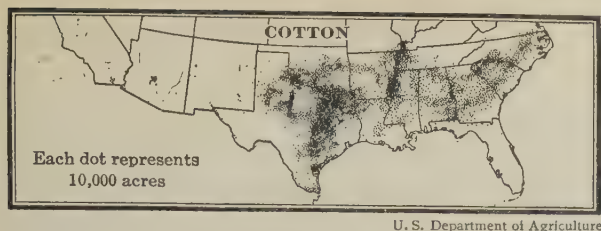


Figure 76. Cotton-growing lands of the United States.

### MAP STUDIES

**Foreword.** Before you begin the map studies, turn to the map on pages 10–11 and find the source of the Mississippi River (G1). In what state is it? Trace the Mississippi River southward to the Gulf of Mexico, and notice that it forms the boundary line between a number of states. Does your own state border the Mississippi?

Mississippi is an Indian name which means "Great Stream." Study the map, and you will see that this great stream has tributaries from the Appalachian Mountains on the east and from the Rocky Mountains on the west. Thus the waters from a very large part of the interior of the United States drain to the Gulf of Mexico through the Mississippi River. We call this part of the country the Mississippi *drainage basin*, or, simply, the Mississippi basin.

The Mississippi divides the Southern States into two sections. The map on the opposite page shows all the eastern section of the Southern States, and the map on page 96 shows all the western section. You will need to use both maps in your study of the Southern States.

#### Group I

1. Notice that the Coastal Plain continues southward from Virginia along the Atlantic coast of the Southern States and westward along the coast of the Gulf of Mexico. 2. The part of the Coastal Plain bordering the Atlantic Ocean is called the Atlantic Coastal Plain, just as it is farther north. Point to this part of the Coastal Plain on the map.

3. The part of the Coastal Plain bordering the Gulf of Mexico is called the Gulf Coastal Plain. Point to the Gulf Coastal Plain on the map. 4. What two states east of the Mississippi River are wholly in the Coastal Plain? 5. Which one

of them is a peninsula between the Atlantic Ocean and the Gulf of Mexico?

6. We call the part of the Piedmont Belt in the Southern States the Southern Piedmont. What four states in the South have a share in this region? 7. What five have a share in the Appalachian Mountains? 8. What two have a share in the Appalachian Plateau?

9. The red lines on this map show the boundaries of the great farming section known as the *cotton belt*. What natural regions are partly in the cotton belt? 10. What states east of the Mississippi are almost wholly in the cotton belt? 11. Figure 76 shows where the most cotton is raised. Notice how little cotton is grown outside the boundaries of the cotton belt.

Now turn to page 97 and work out the map studies in Group I there.

#### Group II

1. Find the Great Smoky Mountains on the map (F2). 2. Find the Holston River west of these mountains, and trace it downstream to the place where it joins the Tennessee River. From there trace the Tennessee River downstream to Chattanooga. 3. The rivers which you have traced drain the part of the Great Valley which is known as the Valley of East Tennessee. Notice how many cities and towns there are in this region of Tennessee.

4. The southern part of the Great Valley, in Georgia and Alabama, is drained by the Coosa River. Find this river on the map. 5. Find a large center of population in this part of Alabama. 6. What is the largest city there? 7. What mines can you visit near that city?

#### Group III

1. Between what two bodies of water does the peninsula of Florida lie? 2. To what natural region of the United States does this peninsula belong? 3. Point to some of the lakes in Florida. 4. Find the *Everglades* in southern Florida. These are swampy lands covered with tall grass.

5. Find the islands called the Florida Keys. These islands belong to the state of Florida. 6. On the map on page 85 find the town of Key West (G7). This is the southernmost town in the United States. 7. How can you reach Key West without traveling on a boat?



Figure 77. Part of a great oil refinery at Port Arthur, Texas. The "stills" where the oil is refined are in the tall towers in the distance. Find some storage tanks and some railroad tank cars in the picture.

**From the oil fields to the refineries.** Some of the petroleum leaves the oil fields in railroad tank cars, but most of it is pumped away through pipe lines laid two or three feet under the ground. Many of the pipe lines lead to cities near the oil fields or to seaports on the Gulf coast. From the mid-continent field much longer pipe lines lead northeastward to cities on the shores of the Great Lakes and in the neighborhood of New York City.

The pipe lines carry the oil to places where there are large petroleum refineries. Near the refineries you would see large numbers of big round storage tanks like those in the oil fields. They are used to store the crude oil until it is refined. The refining is done in "stills" in tall steel towers. In the stills the petroleum is heated to separate gasoline, kerosene, fuel oil, lubricating oil, and other products from it. All the oils that come from petroleum are called petroleum products. *See Figure 77.*

From the refineries large quantities of petroleum products are sent by train to places where wholesale dealers have storage tanks for them. From the wholesale centers motor

trucks carry the oils to factories, stores, filling stations, and other places where they are used or sold. From the seaports large quantities of petroleum products are exported to distant lands in special freighters called "tankers." On the maps in this book the exports of petroleum products are called mineral oils. Turn to the map on page 96 and name two states of the South from which large quantities of mineral oils are exported.

**Oil and the growth of towns.** In Texas and Oklahoma there are many towns which have grown up around the oil wells. Some of the larger cities in the oil fields were once market towns for the surrounding farm lands. Since the discovery of oil they have grown very fast. Among these cities are Wichita Falls in Texas and Tulsa and Muskogee in Oklahoma. Tulsa is the headquarters of the oil industry in the mid-continent field.

Oklahoma City, the capital of Oklahoma, has also grown fast since the discovery of oil in the mid-continent field. Find Oklahoma City on the map on page 93 (F2). Notice that it is centrally located in the state, and that it is a meeting point for many railroads. Its location and railroads have made Oklahoma City a market for the products of the surrounding farm lands, and a center for the distribution of manufactured goods from all parts of the country. Its leading manufacturing industry is flour-milling.

Beaumont and Port Arthur in Texas have become important seaports since the discovery of oil in the Gulf Field. Pipe lines bring crude petroleum to these cities, and together they form the greatest oil-refining center of the South and the leading center for shipping mineral oils. Shreveport and Baton Rouge, Louisiana, have also grown fast since the discovery of oil in the South. Shreveport is the headquarters of the oil industry in Louisiana, and there is a large oil refinery at Baton Rouge.



**Sentences to complete.** Copy the following sentences, filling the blanks with the right names. When you have finished check your sentences by the map on page 96 to make sure that they are correct.

1. The Southern oil fields are in the states of O\_\_\_\_\_, T\_\_\_\_\_, A\_\_\_\_\_, and L\_\_\_\_\_.

2. The Southern seaports from which mineral oils are exported are on the G\_\_\_\_ of M\_\_\_\_\_ in the states of T\_\_\_\_\_ and L\_\_\_\_\_.

**Telling about oil.** Prepare a talk telling about "oil work" in the South. Use the following words in your talk, and try to find pictures to make it interesting.

refineries   pipe lines   tank cars   tankers  
oil wells   derricks   pumps   storage tanks

#### 4. REGIONS SHARED WITH THE MIDDLE ATLANTIC STATES

Turn to the map on page 88, and name the four natural regions which the South shares with the Middle Atlantic States. Study the products of each region, and name those which remind you of work in the same region farther north. As you study this section, make a list of likenesses and differences between the Northern and Southern parts of the natural regions.

#### *The Atlantic Coastal Plain*

**Truck farms.** On the Atlantic Coastal Plain you will see truck farms that will remind you of those farther north. Do you remember how well the surface and soils of the Middle Atlantic Coastal Plain are suited to truck farming? The southern section of the plain has the same kind of surface and soils because it is part of the same natural region. Its climate, however, is warmer, and its growing season is longer. That means that the Southern truck farmers can plant their



Courtesy of Seaboard Air Line Railway Company

**Figure 78.** Harvesting cabbages on the Coastal Plain of South Carolina. Southern truck farmers in different neighborhoods specialize in certain crops just as Northern truck farmers do. Can you explain why?

first crops earlier and harvest their last crops later than the Northern truck farmers can. See Figure 78.

Large quantities of fresh vegetables from these Southern truck farms are sent to New York and other cities of the North in the early spring before the first of the Northern truck crops are ready for sale, and in the late autumn and early winter after the last of the Northern truck crops have been harvested. Since vegetables spoil quickly, they are sent north in express trains of refrigerator cars which keep them chilled so that they reach the Northern markets in good condition. Supplying "early vegetables" and "late vegetables" to the great centers of population in the states of the North pays the Southern truck farmers very well.

**Coastal cities.** North of Florida the largest cities of the Coastal Plain are the three leading seaports. Find these cities on the map on page 88. Give the name of each one and the name of the state in which it is located. What is the leading export of these Atlantic ports of the South? Why is it natural that they should export so much cotton? To what parts of the world does the cotton go?



Figure 79. Part of the water front at Savannah. The ships are waiting to be loaded with barrels of turpentine and rosin. To what parts of the world are these Southern products sent?

Of the three seaports the largest and by far the most important is Savannah, which ranks fourth among the cotton-shipping ports of the South. What exports of Savannah are products of the forests? *See Figure 79.*

Now study the imports of Savannah, Charleston, and Wilmington. What do they all receive from Europe? from Chile in South America? On pages 81–82 you learned something that explains why potash, nitrates, and other fertilizers are among the leading imports of these states. What was it?

Savannah, Charleston, and Wilmington are not great gateways for the whole country, as New York, Philadelphia, and Baltimore are. But they are important gateways for the South, and their trade has to do largely with the work on the farms and in the forests, mines, and factories of the Southern States.

These cities are not such large manufacturing centers as the seaports farther north, and they do not import a large variety of raw materials. Their leading manufactures are cottonseed products, fertilizers, and lumber and wood products. Explain how they get the raw materials for each of these industries.

### *The Appalachian Highlands*

**Tobacco lands.** In what natural region of Virginia did you find that tobacco is the leading farm crop? The tobacco lands of Virginia extend southward into North Carolina. Find the tobacco lands of North Carolina on the map on page 88. With those of Virginia they form one of the two leading tobacco-growing sections of the United States.

As you know, most of the Southern Piedmont is in the cotton belt. But in North Carolina, part of the Piedmont has too short a growing season for cotton,

and here tobacco is the money crop on nearly all the farms. *See Figure 80.*

In this section is Winston-Salem, which is one of the two leading tobacco markets in the United States. Winston-Salem and Durham, farther east, are great centers for the making of pipe tobacco, cigars, and cigarettes. North Carolina leads all the states in our country in the production and manufacture of tobacco.



Courtesy of Norfolk-Portsmouth News Bureau

Figure 80. A Southern boy whose father raises tobacco. He is holding tobacco leaves which are ready to be cured. Tell all you can about tobacco-curing.







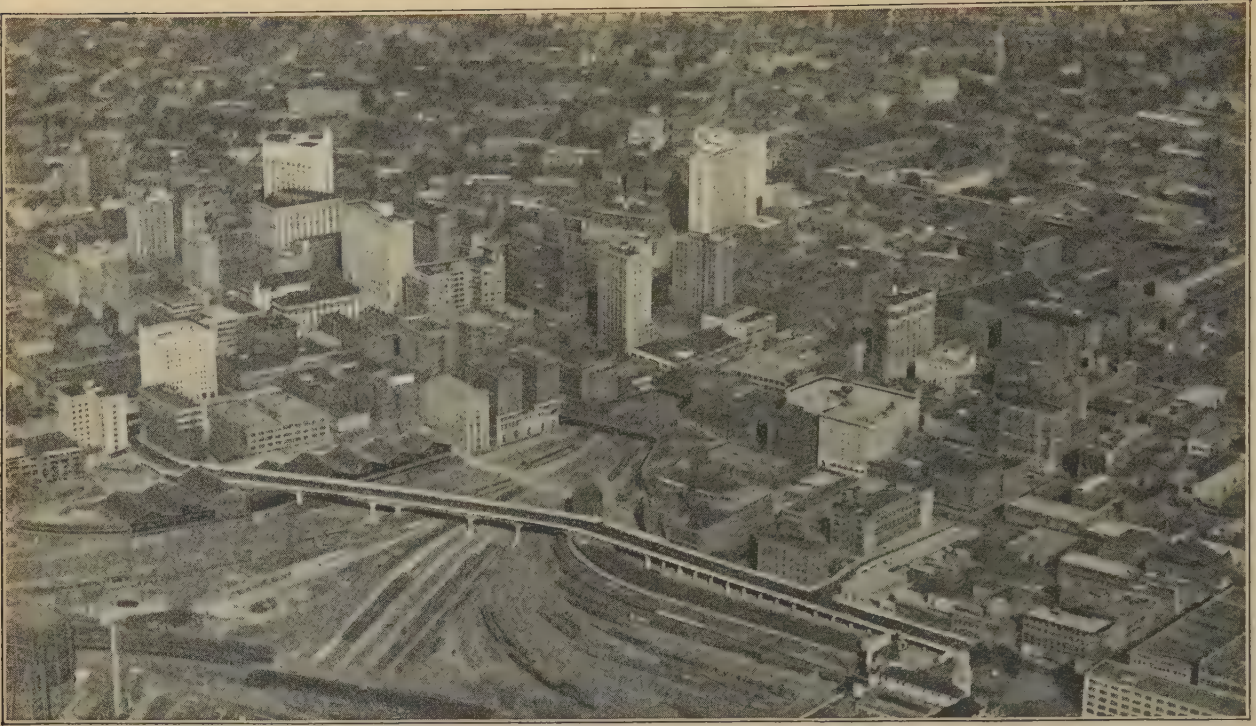


Figure 81. An airplane view of the business section of Atlanta. In the foreground you can see part of the railroad station and the big railroad yards. It is chiefly

because Atlanta is a great railroad center in the midst of a rich farming and manufacturing region that it has grown to be one of the largest cities of the South.

Turn to the map on page 88 and find a part of South Carolina and a part of Georgia where tobacco is an important crop. In what natural region are these tobacco lands?

**Piedmont cities.** The map on page 88 shows that the Southern Piedmont has more cities and towns than the bordering Coastal Plain. That is because it is the principal manufacturing region of the South. The largest cities of the region are named on the map. Notice that several of these are on the fall line. What does that suggest to you about power for the mills and factories? Almost every place in the Southern Piedmont the location of which is shown on the map on page 88 has at least one or two cotton mills. North Carolina is the leading Southern state in cotton-manufacturing, and Charlotte, its largest city, is one of the important cotton-manufacturing centers.

New England and the Southern Piedmont

are the two great cotton-manufacturing sections of the United States. Each one has special advantages for this industry. New England made an early start and is nearer the large centers of population which provide the greatest markets for cotton goods. The Southern Piedmont made a later start, but it is part of the cotton belt where the raw material is produced. Besides this, water power and hydroelectric power are abundant in all parts of the region, and coal can be obtained easily from the Appalachian Plateau.

**Georgia's capital.** On the map (p. 85) find Atlanta, the capital of Georgia (*E3*). This is the third largest city in the South. In what natural region is it located? Explain the statement that "Atlanta is the hub of a great railroad wheel." Then study Figure 81.

Atlanta is in the Piedmont Belt, high enough above sea level to have a comfortable and healthful climate all the year round.



Because of its location and its many railroads, it is the great business center of the eastern section of the Southern States. Many of the big business and manufacturing companies of the North have branch offices here, and Atlanta is a great distributing center for all kinds of goods. They go by train to other cities and towns in many different parts of the South. As you would expect, Atlanta is also a manufacturing city, and its factories turn out many different kinds of manufactured goods.

**"The land of the sky."** Turn to the map on page 88 and find the part of the Appalachian Mountains in North Carolina. People call this region "the land of the sky." It is the highest and roughest part of the Appalachians, and one of the most beautiful sections of the South. It includes the Great Smoky Mountains of North Carolina and Tennessee, and extends eastward to the Piedmont Belt. Mount Mitchell in this region is the highest peak in the Appalachian Highlands.

Like the Adirondacks of New York and the mountains of New England, the "land of the sky" is a great playground. Because it is the highest part of the South, it is the coolest part in summer. For this reason it is a summer-vacation land for large numbers of Southerners. Because of its location in the South, it is never very cold in winter, and this makes it a winter-vacation land for many Northerners.

**The Southern part of the Great Valley.** During your study of the Middle Atlantic States you learned about the Great Valley, which forms a long, narrow lowland through the Appalachian Highlands all the way from New York to Alabama. Before you read about the southern part of the Great Valley, work out the map studies in Group II on page 89.



Courtesy of Connors Steel Co.

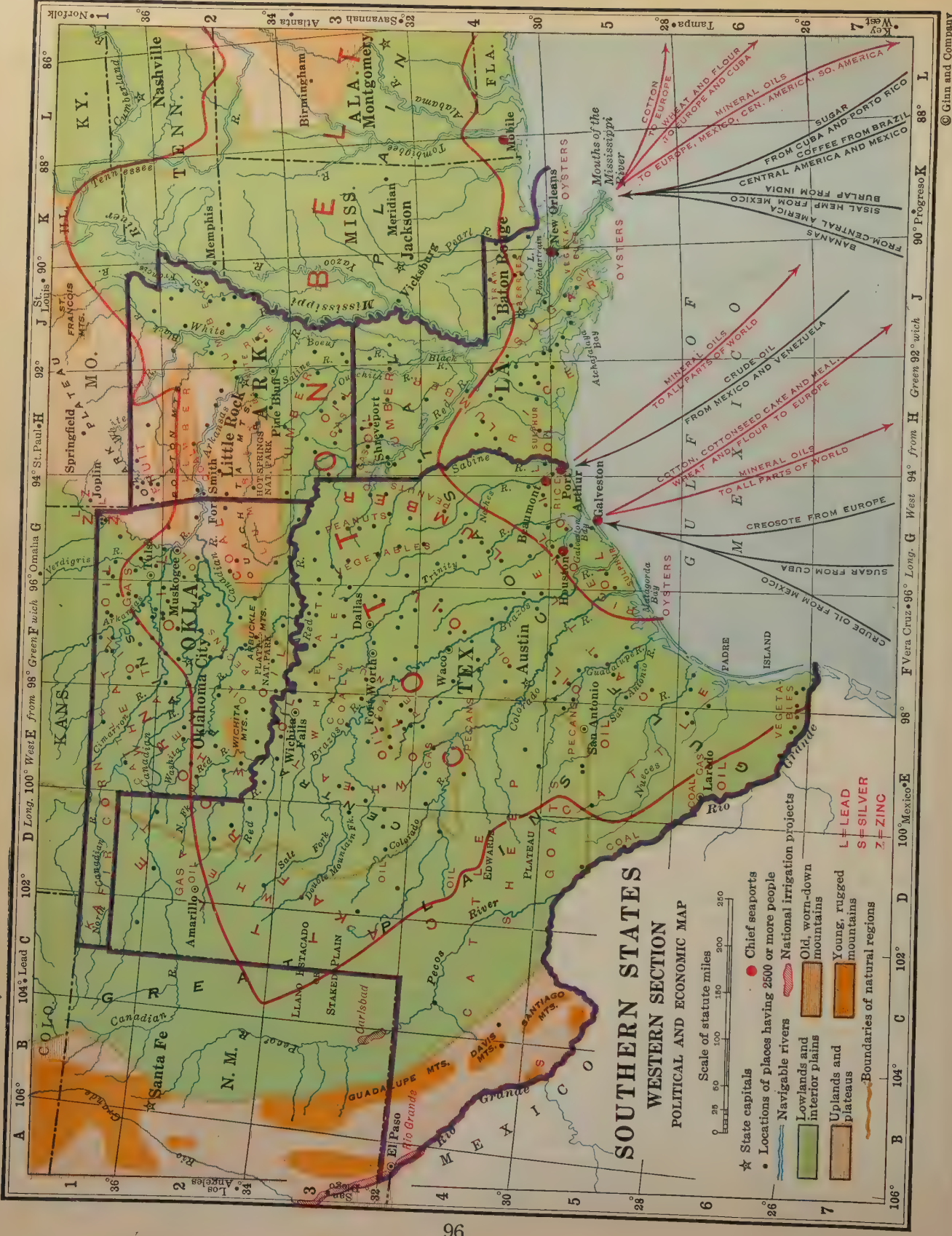
**Figure 82.** A steel mill at Birmingham, Alabama. This city has become a great center for the manufacture of iron and steel because iron ore, coal, and limestone are mined close by.

You have already learned why the northern part of the Great Valley is a rich farming region (p. 63). The southern part is like the northern part, except, of course, that its climate is warmer. Like the rest of the valley, it is a mixed-farming region. Corn is grown on nearly all the farms, chiefly to feed live stock, and many of the farmers make a special business of dairying or the raising of beef cattle. In the part of the valley in Tennessee winter wheat is the money crop on many of the farms. The southern part of the valley in Georgia and Alabama is in the cotton belt, and cotton is a money crop there.

**"The Pittsburgh of the South."** Figure 82 is a picture taken in Birmingham, Alabama. This city is the center of the densely populated section which you found on the map, and it is often called "the Pittsburgh of the South." The picture will tell you why.

Birmingham is located on the western margin of the Great Valley. West of the city, in the neighboring part of the Appalachian Plateau, are extensive beds of excellent coking coal. East of it, in the valley, is a line of hills which are rich in iron ore. There are also







large quantities of limestone in the valley. Nowhere else in the United States are coking coal, high-grade iron ore, and limestone found so close to one another. These three raw materials have made Birmingham the iron-and-steel center of the South.

When you think of all the work in the mines and quarries, in the coking plants, and in the iron-and-steel mills, you can understand why so many people live in and near Birmingham. Besides its blast furnaces and steel mills the district has many factories where goods made of iron and steel are manufactured. Much more coal is mined than is needed by the blast furnaces, and large quantities are sent to other parts of the South. Turn to the map on page 85 and notice how many railroads meet and cross in Birmingham. These railroads carry the products of the mines and factories to all parts of the South and to Southern ports for export.

As yet the Birmingham district produces much less iron and steel than the Pittsburgh district of the North. This is chiefly because the Pittsburgh district made a much earlier start and is nearer the great centers of population where the most iron and steel is needed.

**Alabama's seaport.** Turn to the map on page 88 and find Mobile (C4). This is the principal port from which the iron and steel made in Birmingham are sent to other countries. To what parts of the world do they go? What are the other two leading exports of Mobile? Name four kinds of work in Alabama which help to provide Mobile with its exports.

The map shows that Mobile is at the mouth of a river which forms a navigable waterway leading northward almost to Birmingham. Trace this waterway on the map. It has been deepened so that barges can bring coal, iron and steel, lumber, and other bulky products to Mobile. Explain how this has helped both Birmingham and Mobile.

*Turn over to page 98.*

## MAP STUDIES

### *Group I*

1. What Southern state west of the Mississippi River is wholly in the Gulf Coastal Plain?
2. What two states of the South have a share of the Interior Highlands of which the Ozark Plateau, the Boston Mountains, and the Ouachita Mountains are parts?
3. What natural region forms the southeastern half of Arkansas?
4. What natural region forms the greater part of Oklahoma?

5. The largest state of our country is in this section of the Southern States. What state is it? 6. What three regions of plains meet in that state? 7. What other state in this group shares the Central Plains and the Great Plains with Texas? 8. What river forms most of the boundary between Texas and Mexico?

### *Group II*

1. Name the two regions of mountains which are shared by Arkansas and Oklahoma.
2. Turn to the map of the United States on pages 10-11 and find the Interior Highlands again.
3. What plateau forms the greater part of these highlands?
4. In what state is most of that plateau?

5. Find the Arkansas River, which flows between the Boston Mountains and the Ouachita Mountains. 6. Study the map on page 93, and explain how the valley of this river serves as a highway of transportation through the highlands. 7. What capital city is located where the Arkansas River leaves the highlands?

### *Group III*

1. Find Baton Rouge, the capital of Louisiana, on the map (J4).
2. Notice that the part of Louisiana south of Baton Rouge is shaped somewhat like a hand with the fingers spread apart. This part is the lower Mississippi delta.
3. What is the most important crop grown on this delta?
4. From Baton Rouge trace the Mississippi River downstream to the Gulf of Mexico.
5. What great seaport is located on the Mississippi?
6. Notice that before the Mississippi reaches the Gulf of Mexico, it splits into several different streams which empty into the Gulf by separate mouths. These streams are called distributaries because they distribute the waters of the great river.



Figure 83. Part of the business district of Knoxville, showing the Tennessee River. Of what long valley lowland is the valley of the Tennessee River a part? In what state is Knoxville?

The export and import arrows on the map show that Mobile is one of the gateways for the trade of our country with South America and Central America. Why is it natural for seaports on the Gulf of Mexico to have a large share in this trade?

**Cities in the Valley of East Tennessee.** On the map on page 88 find the place where iron ore is mined in the Valley of East Tennessee. Notice that coal is mined in a neighboring part of the Appalachian Plateau. Chattanooga, in southern Tennessee, is becoming an important iron-and-steel center, and Knoxville, farther north in the valley, manufactures iron and steel goods. Find these cities on the map (*E-F2*), and study Figure 83.

Both these cities carry on many other kinds of manufacturing. Coal from the plateau on the west and hydroelectricity from streams in the mountains on the east supply their mills and factories with power. Since

the valley is a great highway of transportation, they are well located to obtain raw materials and to market manufactured goods. Both cities are important markets for hardwood lumber from the bordering highlands, and have factories for the manufacture of furniture and other products of wood.

**Marble-quarrying.** Knoxville is in the midst of an important marble-quarrying district, and is a center for the shipment of this building stone. Farther south, in the mountains of northwestern Georgia, is another marble-quarrying district. Tennessee and Georgia are two of the three leading states of the country in value of marble production. What state ranks first?

*North, South, or both?* Tell where you would see each thing described below, — in the North, in the South, or in both parts of the country.

1. Truck farms on the Coastal Plain.
2. Cotton fields on the Coastal Plain.
3. Peach orchards on the Coastal Plain.
4. Tobacco fields in the Piedmont Belt.
5. Cotton fields in the Piedmont Belt.
6. Mixed farming in the Great Valley.
7. Cotton fields in the Great Valley.
8. Coal mines in the Appalachian Plateau.
9. Oil wells in the Appalachian Plateau.
10. "Turpentine woods" on the Coastal Plain.

**Questions to discuss.** Divide your class into two groups. Each group may discuss one of the questions below, with the other group as the audience. After each discussion the members of the audience may vote "Yes" or "No" on the question.

1. Is the Southern Piedmont a better region than New England for manufacturing cotton?

2. Is Birmingham a better place than Pittsburgh to manufacture iron and steel?



## 5. REGIONS SHARED WITH THE CENTRAL STATES

You have been studying about some regions which the South shares with the Middle Atlantic States. Now you are going to learn about some regions which it shares with the Central States. These regions are the Central Plains, the Great Plains, and the Interior Highlands. Turn to the map on pages 10–11 and find the places where these interior regions extend southward into the Southern States. What states of the South have a share in each of them?

### *The Interior Plains*

**The Nashville Basin.** On the map on page 88 find the part of Tennessee which lies between the Appalachian Plateau on the east and the Tennessee River on the west. The central part of this region is called the Nashville Basin. It is well named, for it is basin-shaped. The lowest land is in the middle, and surrounding it on all sides but the north is a rim of hilly land. Like the Appalachian Valley, the Nashville Basin is underlain with limestone rock and has very fertile soils. Nearly all the land in the basin is used for farms, but on the hilly rim there are forests of oaks and other hardwood trees.

Most of the Nashville Basin is outside the cotton belt, and the farms are much like those which you will visit in the neighboring section of the Central States. Most of the farmers carry on mixed farming, raising wheat as a money crop, and corn to feed dairy cows, beef cattle, and hogs.

Turn to the map on page 88 and tell what you would expect to see growing on the farms in the northwestern part of this region. This section is part of the second great tobacco-growing district of the United States. The larger part of it is in Kentucky, and you will learn more about it when you visit that state.

On the map on page 85 find Nashville, the capital of Tennessee (*D1*). Notice its central

location in the state and its many railroads. As you might expect, this city is the business center of the Nashville Basin. It is also the second largest city in Tennessee.

The railroads bring farm products from many parts of the state to Nashville to be marketed, and take back manufactured goods needed by the farmers. They also bring lumber from the hardwood forests of the state. Some of it is used in factories in the city, and much is sent to other parts of the country. Nashville is a busy manufacturing city, and among its important manufactures are flour and other foodstuffs, knit goods and clothing, and lumber products and furniture.

**The interior plains of Texas and Oklahoma.** Turn to the map on page 96 and find the parts of Texas and Oklahoma which are in the Central Plains and the Great Plains. Here the cotton belt meets the wheat lands and the grazing lands which you will learn about when you visit the Central States and the Western States. Wheat, as well as cotton, is a valuable money crop in these plains, and thousands of acres of land are used for raising beef cattle.

**Three inland cities of Texas.** On the map on page 93 find San Antonio (*E5*), Dallas, and Fort Worth (*F3*). These are the three largest inland cities of Texas. Although they are in the Coastal Plain, they are so near the Central Plains and the Great Plains that they share in the work of all three of these regions.

San Antonio is the oldest city in the state. Notice that it is located between the grazing lands of the Great Plains and the farming lands of the Coastal Plain. As you would guess from its location, it is the business and manufacturing center of southern Texas. Among its manufacturing industries meat-packing is important. Explain why.

Dallas is a young city, but it has grown very fast. It is in one of the richest parts of the cotton belt, and is the business center of northern Texas. See *Figure 84*.



Photograph by Fairchild Aerial Surveys, Inc., courtesy of Dallas Chamber of Commerce

**Figure 84.** An airplane view of the central business district of Dallas. The skyscrapers in the picture are mostly office buildings where many kinds of business are carried on.

Dallas is also one of the chief manufacturing cities of Texas. Among its manufacturing industries flour-milling, meat-packing, and the manufacture of cottonseed products are important, and no other city in the country manufactures so much cotton-ginning machinery. Explain how each of these industries is connected with the work in the surrounding farm lands. Just outside the city are two large plants for the manufacture of Portland cement, and Dallas is an important distributing point for this building material.

Fort Worth is a few miles west of Dallas, and is the largest inland railroad center of Texas. Years ago it became the headquarters for the cattlemen of Texas, and today it is one of the leading markets for live stock in the United States.

Fort Worth is also a busy manufacturing center. Among its manufacturing plants oil refineries, railroad repair shops, flour mills, and meat-packing plants are important. Give a good reason to explain why Fort Worth is a natural place for the kind of work done in each of these groups of manufacturing plants.

### *The Interior Highlands*

**The highlands of Arkansas and Oklahoma.** Before you read about the life and work in these highlands, work out the map studies in Group II on page 97.

The Interior Highlands would remind you of the Appalachian Highlands. The mountains are old and worn down, with many ridges and valleys. Part of the Ozark Plateau is a hilly upland, but in places it has been so deeply cut by rivers that it is more like a mountain region. Many parts of the highlands are too rough for farming, and are covered with oaks and other hardwood trees.

**Farming and lumbering.** The best farming land in the highland region of Arkansas and Oklahoma is along the Arkansas River, where much cotton is raised. In the mountains to the north and south farming is much harder because of the rough surface of the land. Each farmer raises corn, partly for food and partly to feed his live stock. Some of the farmers raise a few cattle, and nearly all of them keep pigs. The pigs roam in the oak forests, where they eat the acorns that fall from the trees, but before they are sold they are fattened on corn.

Many of the farmers earn extra money in the winter by cutting oak timber in the forests and hewing it into ties which they sell to the railroads. Others work for the lumbering companies. In these mountains, as in so many parts of the Appalachians, nearly all the original forest is gone, and it is the second-growth timber that is being cut today. Since much of the rougher land should be used for timber crops, the United States Government has established national forests in the Boston Mountains and the Ouachita Mountains.



**Ozark fruit crops.** Figure 85 shows what you may see in autumn in the Ozark Plateau in northwestern Arkansas and the neighboring part of Missouri. Here the farmers are more prosperous. They have planted orchards of apples and peaches on hundreds of acres of hilly land, and have made this part of the Interior Highlands one of the leading fruit-producing sections of the United States. Strawberries are another important fruit crop of the Ozark region.

**A health resort.** Near the southeastern margin of the Ouachita Mountains is Hot Springs National Park. As the name suggests, springs of hot water bubble out of the ground here. Many invalids have been helped by drinking the spring water and bathing in it, and the town of Hot Springs has become a famous health resort.

**The capital of Arkansas.** Turn to the map on page 93 and find Little Rock, the capital and largest city of Arkansas (*H2*). What do you see in its location that explains why it has become the largest city in the state? As you would expect, Little Rock is a market for the products of Arkansas, and a distributing center for manufactured goods from all parts of the United States. Besides this, it is a center for the manufacture of cottonseed oil and cake, and of lumber, furniture, and other things made of wood. Explain how these manufacturing industries are connected with other kinds of work in Arkansas.

**Bauxite mines.** Near Little Rock on the map on page 96 you will find the word *bauxite* printed in red. Bauxite is a special kind of clay from which the metal aluminum is obtained. It is dug from pits by steam shovels, and the aluminum is separated from it by the use of electricity. Nearly all the bauxite used in the United States comes from the mines in Arkansas, though Georgia, Alabama, and Tennessee also produce a little. Name at least one use of aluminum.



© Keystone View Company

Figure 85. Packing apples in an orchard in the Ozark Plateau. Why are fruits better crops to raise on hilly lands than field crops such as wheat or corn?

*Can you answer these questions?* 1. Why are the farms in the Nashville Basin more like those in the North than like those in the South?

2. Why is farming harder in the Interior Highlands than in the Nashville Basin?

3. What are the leading Ozark crops?

4. How are the plains of western Texas and Oklahoma like those farther north and west?

5. How is work in the inland cities of Texas connected with work in the surrounding plains?

## 6. THE FLORIDA PENINSULA

In newspapers and magazines you will find many advertisements urging people of the North to spend the winter in Florida. Do you know why Florida is such a famous winter playground? And do you know what kinds of work the people who live there the year round do?

Begin your study of Florida by working out the map studies in Group III on page 89.

**The land and the climate.** In traveling through Florida, you will be struck by the flatness of the land and the large number of lakes and ponds. In the northern part pine forests cover thousands of acres. In the southern part there are great stretches of swamps and marshes. The *Everglades* of southern Florida form the largest area of swampy land in the United States.



© Verne Williams, Miami

**Figure 86.** A beautiful park in Miami, with some of the large hotels where visitors from the North spend the winter months. What do the palm trees suggest about the climate of Florida?

If you should travel as far south as a train could carry you in Florida, the last part of your journey would be made over a number of long bridges which connect the Florida Keys. On reaching Key West, you would be within a hundred miles of the tropic of Cancer. What does this suggest about the climate of Florida?

Florida is so warm that many of the people have no stoves or fireplaces to heat their houses. In the northern part there are frosts from December until the last of February, but in the southern part there are some years when there is no frost at all. In the warmer sections crops can be grown the whole year round.

One reason why Florida is so warm is that it is so far south. Another reason is that it is warmed by the Gulf Stream. You learned about the Gulf Stream in your study of *Home Life in Far-away Lands*. The map on page 306 shows that this current of warm water flows out of the Gulf of Mexico through Florida Strait and swings northward along the Atlantic coast. Thus, in addition to its southern location, Florida is warmed by the waters of the Gulf of Mexico on the west and by the Gulf Stream on the south and east.

**A winter playground.** Because of its warm climate, Florida has become a great winter playground. When the northern part of the United States is swept by cold winds, and the ground is covered with ice and snow, Florida is warm and sunny. To escape the cold weather thousands of Northerners spend the winter in this playground of the South.

Along the east coast there are smooth, sandy beaches. This coastal strip is dotted with cities and towns, where people come to enjoy the bathing and boating. Thousands of the visitors have winter homes here, and thousands

more stay in the hotels. The largest of the winter resorts is Miami. See *Figure 86*.

Many of the winter visitors prefer the lakes and pine woods farther inland, or the beautiful bays on the west coast. Here too there are many hotels and many winter homes belonging to people from other parts of the country. In what ways do the winter visitors provide work for the people of Florida?

**Truck farms.** On the map on page 88 find two sections of Florida where you would expect to see many truck farms. This state is so far south and has such a warm climate that the truck farmers can raise crops in the winter when those farther north have to stop their work. From January to March millions of dollars' worth of winter-grown lettuce, celery, tomatoes, and other vegetables are sent to the Northern markets.

The Florida truck farmers raise vegetables the year round, but winter is their busiest season. There are two reasons for this. One is that winter is the time when they are raising vegetables to send north. The other is that winter is the season when there are the largest numbers of visitors in the state, and





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**Figure 87. Picking grapefruit.** The picking season for oranges and grapefruit is long because only a few of the fruit on each tree ripen at a time. The first ones are ripe in the late fall, and others ripen all through the winter. Therefore the trees must be picked over many times to harvest one crop.



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**Figure 88. Preparing oranges for shipment.** In the packing houses the oranges and grapefruit are washed, sorted according to size and quality, and packed in wooden boxes. In the winter millions of boxes of oranges and grapefruit are shipped from Florida to other parts of the United States.

so the *home markets* for vegetables are greater then than at any other time of the year.

**Florida fruit crops.** Next to vegetables, fruits are the most valuable crops in Florida. Study the map on page 88 and name the two kinds of fruit that are most important there.

Oranges, grapefruit, lemons, and other fruits of the same family are called *citrus fruits*. They are easily damaged by frost, and so they are grown only where there is little danger of it. Florida is well suited to these fruits because it lies so far south and is so nearly surrounded by water that it is less likely to have killing frosts than most parts of the United States. *See Figures 87 and 88.*

The only other state where large quantities of citrus fruits are grown is California. Florida leads in the growing of grapefruit and California in the growing of oranges. Many other fruits are raised in Florida, but the citrus-fruit crops are by far the most valuable.

**Forest products.** Lumbering and turpentine are important in the pine forests of Florida, and this state is second only to Georgia in turpentine and rosin production.

In the lumbering sections there are many saw-mills, and also many factories where wooden barrels, boxes, and crates are made for packing and shipping the fruits and vegetables grown in the state. Pensacola and Jacksonville are important markets for lumber, turpentine, and rosin, and export large quantities of these forest products.

**Phosphate-mining.** On the map on page 88 find the places in Florida where phosphate is mined. Phosphate rock is a very valuable fertilizer. It is dug from the earth with steam shovels and then ground and washed. Some of it is used on the land in this form. Much more, however, goes to factories where it is used with nitrates and potash to make manufactured fertilizers. Florida mines far more phosphate than any other state. Study the map on page 88 and name another Southern state which has phosphate mines.

**Southern fisheries.** Fishing and oystering are carried on along the coast of the Southern States all the way from North Carolina to Texas. Many people get their living in this way, but the value of fishery products of the



Figure 89. A diver going down to gather sponges from the sea bottom. While he is under water, he breathes air which comes through the tube attached to his helmet.

South is less than in the coastal states farther north. On the maps on pages 88 and 96 find the places where oystering is important.

On the western and southern coasts of Florida the gathering of sponges is an important kind of work. Sponges are the soft skeletons of tiny sea animals which live in clusters on the bottom of the sea. Figure 89 and its legend will tell you of one way in which they are gathered.

**Two important cities.** On the map on page 85 find Jacksonville (G4) and notice how many railroads meet there. What did you learn about this city on page 103? Jacksonville is often called "the gateway to Florida" because so many of the railroads entering the state pass through it. It is also an ocean gateway, for ships come to its wharves with goods from other parts of the United States and from distant parts of the world, and they carry away lumber, turpentine, rosin, and other products of Florida.

As you might expect, this gateway city is the leading business center of Florida and a great center for the distribution of manufactured goods to all parts of the state. It also carries on a considerable amount of manufac-

turing. Its leading manufactures are lumber products and fertilizers. Can you explain why?

On the map on page 88 find Tampa, the leading seaport of Florida (F6). What does Tampa import from Cuba? Turn to the map on pages 240-241 and notice that Habana, the leading port of Cuba, is almost directly south of Tampa. Steamship lines connect these two ports, and train ferries carry freight cars back and forth between Habana and Key West. Large quantities of tobacco are imported into Florida from Cuba, and Tampa manufactures more cigars than any other city in the world. There are cigar factories at Key West too, and many of the cigar-makers in both cities are Cubans.

Tampa is an important center for business connected with fruit-growing, truck farming, phosphate-mining, and other work in Florida. What products of Florida does it export?

**Florida "F's."** Three important "F's" in Florida are farms, forests, and fisheries. They provide eight of the nine Florida products listed below. Read the name of each product and tell which "F" produces it. Then tell how the ninth product is obtained.

|            |            |           |
|------------|------------|-----------|
| vegetables | rosin      | sponges   |
| turpentine | oysters    | lumber    |
| oranges    | grapefruit | phosphate |

**Finding answers in the climate.** Give a "climate answer" to each question below:

1. Why is Florida a winter playground?
2. Why are citrus fruits important crops in Florida?
3. Why are Florida truck farmers busiest in the winter?

**A Florida exhibit.** Collect pictures of Florida from magazines and newspapers, and bring them to school. Let a committee of five pupils choose the most interesting pictures for a Florida exhibit. Invite some other children in your school to see the exhibit, and be ready to answer any questions they may ask about the pictures.



## 7. THE MISSISSIPPI VALLEY AND THE GULF COAST LANDS

Before you study this section, see if you can answer any of the following questions.

1. What is the Mississippi flood plain?
2. What is the Mississippi delta?
3. What are levees?
4. Where in the United States are rice and sugar cane leading crops?
5. What is the greatest Southern seaport?

You will learn the answers to these questions as you study about the Mississippi Valley and the Gulf coast lands.

**A great cotton market.** On the map on page 85 find Memphis (B2). In what state is this city? On what river is it? Memphis is centrally located in the northern part of the cotton belt and is an important railroad center. Because of its location and its railroads, it is an inland "gateway" through which large quantities of cotton from the South pass on the way to mills in the North.

Memphis is also a great cotton market, and a great center for the manufacture of cottonseed products. In its warehouses you could see thousands of bales of cotton, and you could watch buyers from textile mills as they examine the cotton and make arrangements for buying it. Along the river front you would see steamboats and barges being loaded with cotton to be sent down the Mississippi to New Orleans for export. Thus Memphis is a gateway for cotton going south as well as for cotton going north.

**The Mississippi flood plain.** Memphis stands on a high bluff overlooking the Mississippi *flood plain*. The flood plain is a long strip of land bordering the Mississippi River from southern Illinois to southern Louisiana. Its soils have been laid down by the Mississippi and its tributaries in times of flood, and are deep, fine, and fertile. The part of the plain in the South is a "land of cotton."



Courtesy of L. B. Robeson

**Figure 90.** A levee along the Mississippi River. Notice that the river at the right is higher than the road at the left. What would happen to the road if the levee should break, or the river should rise higher than the levee?

**Floods and levees.** Turn to the map of the United States on pages 10–11 and notice how many large rivers empty into the Mississippi. They come from higher lands far to the east and west, and their waters reach the sea through this one great stream. When the snow melts too quickly or there are heavy rains on the higher lands, the water in the Mississippi rises and overflows the banks. Sometimes it spreads out over hundreds of square miles of the flood plain, and does millions of dollars' worth of damage. Farm lands are covered with water, crops are ruined, houses and barns are swept away, and live stock are drowned. The people have to leave their houses in boats and camp wherever they can until the water goes down.

In order to lessen the danger of such floods, high embankments called *levees* have been built along the banks of the Mississippi. In ordinary flood times they hold back the water and keep the river from overflowing into the bordering lowlands. There are times, however, when the water rises higher than the levees, or the river breaks through them. It is at such times that the worst floods occur. See Figure 90.



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Figure 91. Harvesting sugar cane. Men and women work in the fields, cutting the cane and stripping off the leaves. The stalks are then taken to factories such as you see in Figure 92.



Figure 92. A sugar factory in the midst of a cane field in Louisiana. In factories like this the sugar cane is crushed to squeeze out the juice, and from the juice coarse "raw" sugar is made. From the factories the raw sugar is sent to refineries, where it is changed into the fine white sugar that we use on our tables.

**The Mississippi delta.** The lower part of the Mississippi flood plain in Louisiana is called the lower Mississippi *delta*. Before you read about the delta, work out the map studies in Group III on page 97.

The Mississippi River carries huge quantities of mud and sand from its basin to the Gulf of Mexico. There, where it reaches the quiet water, it drops the mud and sand, and they pile up on the bottom of the Gulf.

Long ago the Gulf of Mexico extended much farther inland than it does today, and so the mouth of the Mississippi was much farther north. Little by little the great river has built more land outward into the Gulf by dropping its load of rock material. This river-made land is known as the Mississippi delta. It has taken a long, long time for the river to build it, but the work is still going on, and every year a little more land is being built out into the Gulf. From time to time the rock material has blocked the course of the river, making it split into the distributaries which you have seen on the map. Thus the Mississippi has several mouths instead of one.

**Sugar-cane lands.** The lower Mississippi delta is not a "land of cotton." Here, instead of cotton plantations, you will find fields of sugar cane. Sugar cane looks a little like corn, but it is grown for the stalks instead of for the seeds or the leaves. The stalks contain a sweet juice from which sugar is made. Figure 91 shows what you would see if you should visit the cane fields at harvest time. Figure 92 shows one of the mills where "raw" sugar is made from the juice in the stalks of cane. Study both pictures and their legends.

Some of the raw sugar is sent to refineries in the cities of the North where it is changed into white sugar, and some of it goes to a refinery in New Orleans.

Sugar cane is a tropical plant, and it needs a growing season of at least eight months. The southern part of Louisiana is one of the very few places in the United States where the growing season is as long as that. So little sugar cane is grown anywhere else in the United States that Louisiana produces almost the entire crop of the country.





Courtesy of Chamber of Commerce, Beaumont, Texas

**Figure 93.** Harvesting rice in Texas. The harvesting machines, drawn by tractors or mules, cut the rice stalks, bind them in bundles, and drop the bundles on

the ground. The bundles are then stacked in "shocks" in the field so that the grain will dry in the sun. Notice how level the surface of the Coastal Plain is here.

**A Southern grain crop.** On the lower Mississippi delta and farther west on the Coastal Plain of Louisiana and Texas you will see many rice fields. Find the rice lands on the map on page 96.

Rice is a grain which needs so much water that the fields must be flooded during part of the time while it is growing. Water for this purpose is pumped from rivers and wells and let into the fields through ditches. When the grain begins to ripen, the fields are drained so that they will be dry by harvest time.

Figure 93 shows how the farmers harvest the rice. When it is thoroughly dry, it is put through a threshing machine to separate the kernels, or seeds, from the stalks, or straw. The kernels are covered with tight-fitting brown husks. Before the rice is used, the husks must be removed and the kernels are often cleaned and polished. This is done in mills in the cities near the rice lands.

Two thirds of all the rice grown in the United States comes from Louisiana and Texas. On the map on page 96 find another rice-growing section in Arkansas.

**The lower Rio Grande valley.** In southern Texas, along the Rio Grande, is a section where the farmers specialize in raising truck crops, grapefruit, and oranges. Like Florida, the lower Rio Grande valley has a long growing season, and the farmers send winter vegetables to the Northern markets.

**Sulphur mines.** Study the map again and find two places in the Coastal Plain where sulphur is mined. Sulphur is a yellowish rock which has many different uses. The largest quantities are used in the manufacture of paper pulp. The sulphur beds of Louisiana and Texas supply a large part of all the sulphur produced in the world.

**Seaports of Texas.** The map on page 96 shows the four leading seaports of Texas. What two of them are located on Galveston Bay? This bay is the best harbor on the coast of Texas, and of the four ports Houston and Galveston are by far the most important. Both of these ports export large quantities of cotton and cottonseed products.

Besides being an important seaport, Houston is the largest city of Texas, the leading





Figure 94. The deep-water channel for ships at Houston. The broad part of the channel nearest you is the "turning basin" where ships turn around to go

back down the river. Find some large railroad freight yards near the wharves in the picture. In the distance, beyond the bend in the river, there is an oil refinery.

railroad center, and one of the chief manufacturing centers. It is located on a short river which flows into Galveston Bay and which has been made deep enough to provide a channel for ocean-going ships. Pipe lines from the neighboring Gulf field and also from the mid-continent field bring crude petroleum to refineries along the water front at Houston, and "tankers" carry the refined oils to all parts of the world. *See Figure 94.*

Among the manufacturing plants of Houston are rice mills, planing mills where many kinds of lumber products are made, and railroad repair shops. Why is Houston a natural location for these manufacturing plants?

Galveston is a much smaller city than Houston and a much less important manufacturing center, but it is a greater seaport.

It is located on the eastern end of an island which partly incloses Galveston Bay. In order to reach Galveston, trains, electric cars, and automobiles cross a great bridge which connects the city with the mainland.

The island on which Galveston is located is so low that the seaward side is protected by a great concrete wall seventeen feet high and six miles long. In times of storm, when the waves are high, this wall breaks their force and keeps the city safe. The piers, docks, and freight yards are on the inner side of the island. *See Figure 95.*

Galveston is the greatest cotton-shipping port in the world. To what continent does most of the cotton go? Along the wharves are huge sheds where more than a million bales of cotton can be stored at one time.





Figure 95. Part of the water front at Galveston. The long, low building on the wharf is a great freight and passenger terminal. In this building cotton and many

other kinds of goods are stored, waiting to be shipped away. Find some big ocean freighters, some railroad freight yards, and a large grain elevator in the picture.

Along the water front there are also storage tanks for oil and elevators for grain. The oil that is exported comes from Texas and Oklahoma, but much of the wheat and flour comes from the wheat lands in Kansas and Nebraska. Thus Galveston serves as a gateway through which some of the grain of the interior plains passes on its way to other parts of the world.

Turn to the map on page 96 and name the leading imports of the Texas seaports. Notice that two of them come from neighboring countries rather than from distant parts of the world. Much crude oil from Mexico is refined in Texas, and its products shipped away. Cuba is the leading country of the world in the production and export of cane sugar, and the United States is its best customer. Why does much of its sugar enter the United States through the Gulf ports?

**The leading seaport of the South.** Turn to the map on page 96 and find New Orleans again. In what state is it? On what river is it located? New Orleans is the largest city of

the South and by far the most important seaport. You may think of it as the great Southern gateway of the United States.

The map shows that New Orleans is not at the mouth of the Mississippi, but about a hundred miles upstream, and that it lies between a bend of the river and Lake Pontchartrain. This is not really a lake, but an arm, or bay, of the Gulf of Mexico. The people of New Orleans have built a canal from the Mississippi River to Lake Pontchartrain to give the city a longer water front and to shorten the distance for ships coming to this port from the East. The busiest part of the water front is along the Mississippi. There you will see ships from all parts of the world loading and unloading their cargoes. *See Figure 96.*

**The trade of New Orleans.** Like Houston and Galveston, New Orleans exports large quantities of the cotton and the mineral oils of the South. What do you find among its exports on the map which shows that New



Figure 96. The big bend in the Mississippi River at New Orleans. The long water front is protected from floods by levees, and is lined with wharves, railroad

tracks, storage warehouses, and factories. Why is the water front a convenient place for factories? Explain why railroads have been built close to the river.

Orleans serves as a gateway for farm products of the interior plains?

The map shows that many of the leading imports of New Orleans come from the countries in the southern part of North America and in South America. Name three different foodstuffs that come to New Orleans from those countries. Mexico, Central America, and South America produce many foodstuffs and raw materials that are needed in the United States. Because of its location in the South, New Orleans is one of the principal gateways through which these products enter our country.

**Manufacturing in New Orleans.** Besides being a great seaport, New Orleans is also a great manufacturing center. Among its manufacturing plants are rice mills, a great sugar refinery, lumber-planing mills, furniture factories, and factories where burlap bags for

sugar and rice are made. Among these manufacturing plants, which ones get their raw materials from the farms and forests of the South?

It is the location of New Orleans that has made it a great manufacturing center and the largest city and seaport of the South. First of all, it is located near the southern end of the Mississippi Valley, which is a natural highway of transportation from north to south through the United States. Second, it has a central location on the Gulf of Mexico, and is a meeting place for railroads from all parts of the South. Third, it is conveniently located for trade by sea with Mexico, Central America, and the countries of South America. Trade with these countries south of the United States is growing every year, and therefore New Orleans is likely to become an even greater seaport in the future.



**A crop test.** This test will help you to review what you have learned about farming in the South. Give the name of the crop needed to complete each sentence correctly.

1. The "king of crops" in the South is cotton.
2. The great money crop in northern North Carolina is tobacco.
3. The most important crop raised in the South to feed live stock is corn.
4. Crops sent in large quantities to cities in the North in winter are oranges.
5. The leading fruit crops of Florida are oranges and grapefruit.
6. A crop raised partly for feeding live stock and partly for the sale of the nuts is pecan.
7. The leading crop of the lower Mississippi delta is cotton.
8. The special grain crop of the Gulf coast lands in Louisiana and Texas is rice.
9. An important fruit crop in Georgia is peaches.
10. An important crop from nut trees in the South is pecan.

**A mineral test.** Prove that you are well acquainted with the mineral products of the South by choosing the right ending for each sentence below :

1. The leading mineral product of the four Southern states west of the Mississippi River is silver.                      petroleum. ✓                      coal.
2. The rock mined in Florida for fertilizer is sulphur.                      marble.                      phosphate. ✓
3. The leading Southern state in the production of iron ore is Alabama. ✓                      Tennessee.                      Texas.
4. Texas and Louisiana produce most of the world's supply of copper.                      petroleum.                      sulphur. ✓
5. Tennessee and Georgia rank next to Vermont in the quarrying of slate.                      marble. ✓                      granite.
6. The leading state in the production of bauxite is Arkansas. ✓                      Mississippi.                      Florida.

**Giving reasons.** Complete each of the following sentences by giving reasons for the fact which it states :

1. The South is the great cotton-growing section of our country because long-ginned.
2. The Southern Piedmont is a great cotton-manufacturing region because electric power.
3. New Orleans is the leading seaport of the South because Gulf-Mexico.
4. Atlanta is a great business and distributing center because its location.
5. Birmingham is an iron-and-steel center because it has coal & iron mines in the state.

**Can you name these Southern cities?** Several cities of the South which are noted for special kinds of work are described below. Write their names in a column on a piece of paper. Then exchange papers and correct one another's lists.

1. The greatest cotton-shipping port in the world. New York
2. A great cotton market in Tennessee. Memphis
3. A city which manufactures much cotton-ginning machinery. Atlanta
4. A great tobacco market in North Carolina. Winston-Salem
5. The headquarters of the oil business in the mid-continent field. Oklahoma City
6. Two cities which form a great center for the refining and shipping of oil. Port Arthur & Houston
7. Two cities on the Atlantic coast which are markets for turpentine and rosin. Jacksonville & Savannah
8. A great live-stock market in Texas. Dallas

**Getting cargoes for ships.** To what port or ports of the South should you send a ship to get each of the cargoes named below? Write down the names of the ports for each cargo, and when you have finished check your lists by the maps on pages 88 and 96.

- |                 |                         |
|-----------------|-------------------------|
| 1. Cotton       | 4. Southern pine lumber |
| 2. Phosphate    | 5. Iron-and-steel goods |
| 3. Mineral oils | 6. Rosin and turpentine |

**A poster contest.** Look in old magazines for pictures of products of the Southern States. Cut out the most interesting ones, paste them neatly on a poster, and bring the poster to school. Ask your teacher to be the judge to decide whose poster is best.



Figure 97. Looking across a cornfield on a farm in the Central Plains. Other fields on the farm are used for other crops, and some are used to pasture live

stock. Notice how large and well-kept the farm buildings are. You will see many large and well-managed farms in your travels through the Central States.

## V. THE CENTRAL STATES

**Foreword.** After your visit to the Southern States you will always think of them as the great cotton-growing section of our country. Now you are going north to visit the Central States, where the greatest quantities of food are produced.

This north-central part of our country was not settled until long after there were many good-sized towns and cities along the Atlantic coast. But in time people from the East began to move across the Appalachian Mountains to make new homes in the interior plains. Year after year more settlements were made, and after railroads were built the population in the plains increased very fast. Today the Central States have millions of people and many large cities. Do you know why so many people can make a living in these states?

To solve this problem you need first of all to get acquainted with the Central States. Begin your study by doing the map work suggested below.

**Map work.** On the map of the United States which you are making, trace the boundaries of the Central States from the outline map on page 315. Print the name of each state, or its abbreviation, on your map.

When you have finished, turn to page 121. Read the foreword there and then work out the map studies in Group I.

**A list to make.** Now that you have studied the maps, make a list of reasons which you think help to explain why so many people live in the Central States. Keep this list in a safe place, for you will want to check it as you study this chapter. You will probably wish to add to it from time to time.



## 1. A GREAT FOOD-PRODUCING SECTION

In the list which you made did you put down farming or farm lands as one reason why so many people live in the Central States? And did you think of some of the great food crops like wheat and corn?

The Central States produce nearly three fourths of all the wheat and corn grown in our country, and over three fourths of all the oats; they have nearly half of all the cattle and nearly three fourths of all the hogs. You can see, then, that they do more than any other part of the United States to provide the people with food.

It is interesting to know that the Central States are such a great food-producing section, but it is more interesting to know why. Can you suggest any reasons?

**How the land is suited to farming.** Turn to pages 8 and 9 and study the pictures of the interior plains again. Vast stretches of the Great Plains are as level as the part shown in Figure 9. In the Central Plains most of the land is more like that shown in Figure 8. Although its surface is not perfectly flat, broad stretches of it are remarkably level and are well suited to the use of farm machinery. Level surface, then, is one reason why the interior plains are a great farming region.

**How the glaciers helped.** Turn to the map on pages 10-11, and trace the line of arrows that shows how far south the continental ice sheets spread in the Central States. As the great glaciers moved southward over the interior plains, they carried along huge quantities of rock material, much of which was fairly fine. When the ice melted away, the rock materials were left behind, spread out over thousands of square miles of the plains. We call the soils left by the continental glaciers *glacial soils*. Most of the glacial soils of the interior plains are very fertile, and they are not so stony as the soils of New England. Which of the Central States were wholly, or almost wholly, covered by the ice?

**How the climate helps.** Turn to Figure 195 on page 200 and study the length of the growing season in the Central States. Notice that the frostless season lasts six months along their southern margin, and that only in the northernmost parts of these states are there any places where it lasts less than four months. In order to ripen, most varieties of corn need five months without frost, while wheat and oats need less than four. Thus the growing season in the Central States is long enough for the kinds of crops that provide large quantities of food for people and feed for live stock.

Figure 194 on page 200 shows that the greater part of the Central States has over twenty inches of rain each year. That is enough rainfall for most crops. Besides this, the rainfall is greatest in the late spring and early summer, when the growing crops need it most.

**How the plains were settled.** The first settlements in the plains were made by people from the East who crossed the Appalachian Mountains on foot, on horseback, and in wagons drawn by horses or oxen. On the map on pages 10-11 find the trails which they followed across the mountains to the Kentucky and Ohio rivers. When the settlers reached the rivers, they built flatboats, put their animals and household goods on board, and floated downstream until they found a place suitable for a settlement. *See Figure 98.*

In Kentucky, Ohio, Indiana, and southern Illinois the settlers found the land covered with hardwood trees. They began at once to cut down the trees and clear the land for farming. Year after year more land was cleared and turned into farms, and today most of the original forest is gone.

The earliest settlements were made along the rivers, for there were no roads or railroads, and the streams provided the easiest means of travel and transportation. Some of these early river towns have grown to be large cities.



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**Figure 98. Cumberland Gap.** Thousands of settlers traveled down the Great Valley and through this gap in the Appalachian Mountains to the Central Plains. Find Cumberland Gap on the map on pages 10-11 (K3).

The settlers who moved northward into central Illinois and across the Mississippi River found prairies, or grasslands, instead of forests. Only along the streams were there any trees. At first this was a disappointment, for the settlers thought that lands without trees would be poor for crops. Then, too, they needed wood for fuel and building material, and it took courage to settle where trees were scarce. In time they learned that the prairie soils were rich and would produce excellent crops, and when railroads were built the prairies were settled rapidly.

**Making a summary.** Write a short paragraph summing up the four facts which explain why the Central States are a great agricultural section.

**Special credit work.** Many interesting stories have been written about the men who first explored the country west of the Appalachian Mountains and the people who first settled there. Try to find books telling about Daniel Boone and George Rogers Clark, and tell the stories of these men to your classmates.

If you live in one of the Central States, try to find out who the first settlers in your state were, and how they lived and worked.

## 2. THE CORN BELT

Turn to Figure 196 on page 201 and find the part of the Central Plains which is known as the *corn belt*. If you travel through this section in the summer, you will hardly need to be told its name, for you will see mile after mile of corn-fields like the one shown in Figure 97. Corn is the principal crop of the corn belt just as cotton is the principal crop of the cotton belt.

Corn, as you know, is raised in many other parts of the United States. The corn belt is simply the section where the most corn is raised. The farmers there produce half of all the corn grown in the United States, and one third of all that is grown in the world.

From the maps on pages 120 and 128 name the states which share the corn belt. Then study the maps on pages 118 and 119, and answer the following questions:

1. What crops besides corn do you expect to find in the corn belt?
2. What kinds of live stock do you expect to see on the corn-belt farms?

**Corn-belt crops.** After studying the maps you must have made up your mind that the corn belt is a section of mixed farming. The corn-belt farmer uses part of his land for pasture, part for hay, and the rest for crops of grain. At least half of the land used for grain is planted to corn, and the rest to wheat or oats, and sometimes barley or rye. Except in the north-central part of the corn belt, wheat is a money crop on most of the farms. Large quantities of winter wheat are raised wherever the winter weather is not too cold.

Oats are also grown in all parts of the corn belt, but the largest quantities are raised in the northern section. The winters there are so cold that winter wheat is sometimes harmed, and so the climate is better suited to the raising of oats which are planted in the spring. Many of the farmers raise only enough oats to feed the horses that they use in their farm work. Those who raise more oats than they need sell part of them each year.





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Figure 99. A farmer driving a cultivator which loosens the soil and destroys the weeds between the rows of corn. If left to grow, the weeds use up plant food in the soil needed by the corn.

**The corn-belt farmer and his work.** These crops keep the farmer busy from early spring until late fall. Early in the spring — sometimes even before all the frost is out of the ground — he prepares a field for oats and plants the seed. This can be done because oats are hardy, and the seeds are not easily harmed by frost. Next the farmer prepares his cornfields for planting, but he seldom sows the seed until the danger of frost is over. May is the month when most of the corn is planted on the corn-belt farms.

From June until September the weather in the corn belt is warm day and night, and there are frequent thundershowers. This is just the right kind of weather for corn, which needs much moisture and much hot sunshine. While the young corn is growing, the farmer cultivates the cornfields several times to get rid of the weeds. See Figure 99.

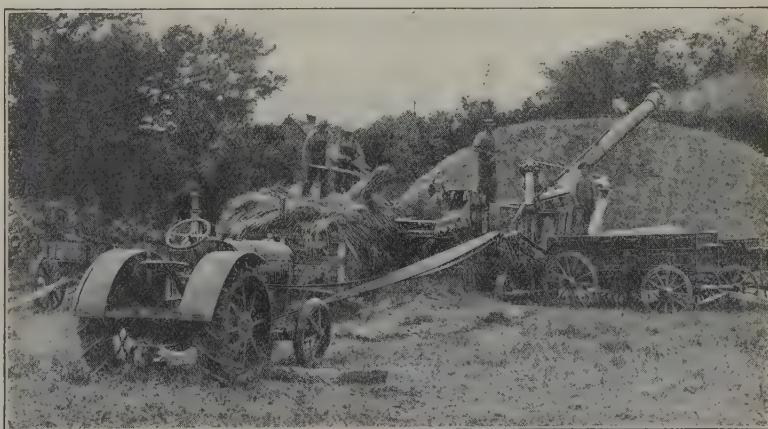
Late in June the farmer cuts his hay and gets it into the barn. By the time the haying is over, the autumn-sown wheat and the spring-sown oats are usually ripe,

and the harvesting begins. Harvesting machines much like those which you saw in the rice fields of the South are used for this work. Drawn by horses or tractors they move back and forth across the fields, cutting the grain, binding it in bundles with twine, and dropping the bundles on the ground.

The bundles of wheat and oats are stacked in shocks in the fields and left there until both the seeds and the stalks are thoroughly dry. Late in July or early in August the threshing begins. The big threshing machine is drawn into

the farmyard or the grainfields, and the wheat or oats are brought to it in wagons. Figure 100 shows how the threshing is done.

While the wheat and oats are being harvested and threshed, the corn is growing taller and taller, and the ears are beginning to fill out and then to ripen. Most of the corn is left standing in the fields for some time after it is ripe, and is not harvested until the ears are thoroughly dry. Figure 101 will show you how many of the farmers harvest their corn.



Courtesy of International Harvester Company of America, Inc.

Figure 100. Threshing wheat. The men at the left pitch the wheat into the threshing machine which separates the seeds, or grain, from the stalks, or straw. The grain slides down a chute from the thresher into a wagon. The straw is blown out of the big pipe and piles up on the ground. Oats are threshed the same way.





Figure 101. Harvesting corn. The farmer at the right is driving a corn-picker, which picks the ears of corn from the stalks, strips off the husks, and drops the husked ears in the wagon.

In the eastern part of the corn belt most of the farmers cut the ripe corn with harvesting machines. The stalks of corn are then stacked in shocks in the fields, and the ears are husked by hand after they are dry.

When the corn is once dry, it is not injured by frost; so the picking and husking go on through October and November and often into December. As one field after another is harvested, cattle are often turned into the fields to eat the stalks and husks.

Sometime during the fall the winter wheat must be planted and next year's cornfields are usually plowed. When this has been done and all the corn has been harvested, the farmer's field work is over until spring comes again.

**Corn, cattle, and hogs.** Are you wondering what the corn-belt farmers do with all their corn? Some of them sell part of it, but most of them store it away in corncribs on their farms and use it to feed and fatten cattle and hogs. Corn is bulky and therefore expensive to ship. Except on the farms that are near the large city markets, the farmers can make more money by feeding

their corn to cattle and hogs and selling the animals than by selling the corn itself. Therefore most of the corn goes to market in the form of beef or pork. So many hogs are raised that the corn belt is also the hog belt of the United States. *See Figure 102.*

Large numbers of the cattle that are fattened in the corn belt come from the grasslands farther west. The corn-belt farmers buy them in the fall, feed them on corn for a few months to make them fat, and then sell them in

the large cities. So many cattle are fattened for market that the corn belt is also a beef-cattle belt.

**Dairy cows.** Nearly every corn-belt farmer keeps a few cows to supply his family with milk, and many send cream to butter factories. Some have large herds of cows and make a special business of dairying to supply the cities with milk and cream. On the dairy farms much of the corn is cut while it is green, and is stored away in silos for winter feed for the cows. The dairy farmers use more of their land for pasture than other corn-belt farmers do, and they raise more hay for win-



Figure 102. Hogs feeding on corn in a farmyard in the corn belt. Part of the corncrib shows at the right. Millions of fat, corn-fed hogs are sent to the meat-packing plants every year.







ter feed. In the moister parts of the corn belt clover is an important hay crop.

**A special hay crop.** In Nebraska and Kansas, where there is less rain, alfalfa is the leading kind of hay. Alfalfa needs less moisture than other kinds of hay and, used with corn, is excellent for fattening cattle. Turn to the map on page 128 and find the section where the most alfalfa is raised. This is the greatest alfalfa-growing section of the country, and alfalfa is a money crop as well as a feed crop on many of the farms.

*Something to do.* Study the maps on this page and page 119, reading the legends carefully.

When you have finished, choose from the list below the four crops and the two kinds of live stock which are most important in the corn belt :

|        |       |             |
|--------|-------|-------------|
| barley | oats  | beef cattle |
| corn   | rye   | dairy cows  |
| hay    | wheat | hogs        |

**Cities of the corn belt.** There are many cities and towns in the corn belt, but they are not crowded together to form such large centers of population as you found in the manufacturing districts of the East. Instead, they are rather evenly scattered over the plains. That is because it is easy to build railroads in the plains, and so a large number of medium-sized cities have grown up as market centers for the surrounding farm lands. The largest cities owe their growth to locations which have made them great railroad centers. As you read about these cities you will find that most of them are on good-sized rivers. What did you learn on page 113 which explains this? Before you read about the corn-belt cities, work out the map studies in Group II on page 121.

It is easy to understand the work in the corn-belt cities if you remember that the farmers of the surrounding lands have grain and live stock to sell, and that they need to buy all kinds of manufactured goods.

*Turn over to page 122.*

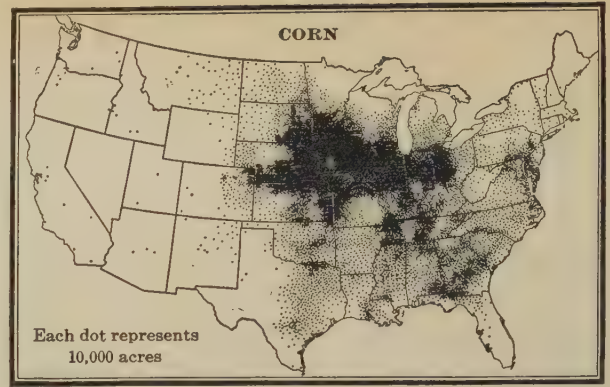


Figure 103. A map showing where corn is grown in the United States. Compare this map with Figure 194 on page 200, and you will see that most of the corn is grown where the yearly rainfall is over 20 inches.

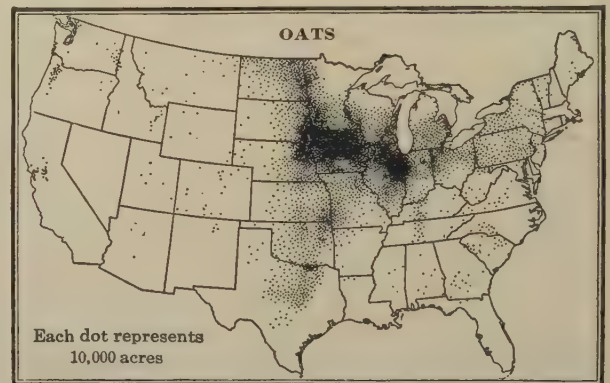


Figure 104. A map showing where oats are grown in the United States. Oats rank next to corn among the crops grown to feed live stock and are especially valuable for feeding horses. In what other ways are oats used?

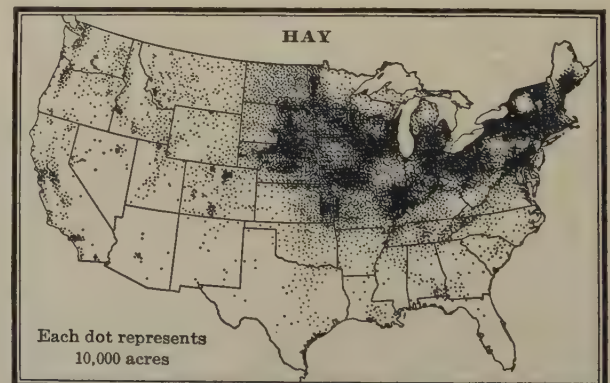


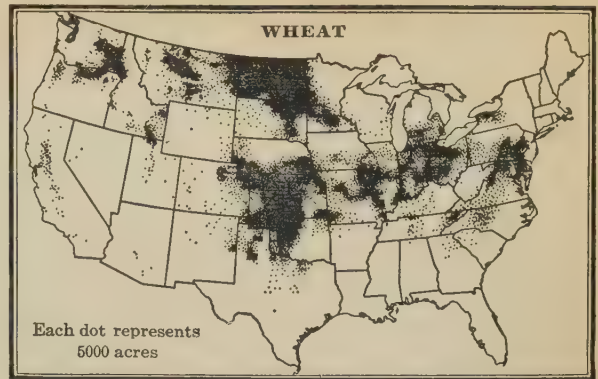
Figure 105. A map showing where hay is grown in the United States. Hay grows best in a cool, moist climate, and the largest quantities are raised in the hay and dairying belt. See Figure 196 on page 201.





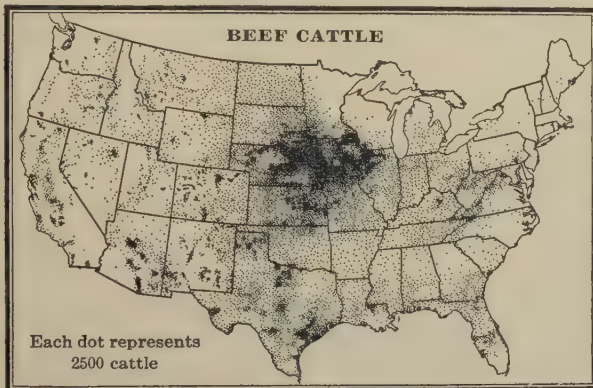
U. S. Department of Agriculture

Figure 106. A map showing the distribution of hogs in the United States. Compare this map with Figure 103, and notice that the corn belt is also the hog belt of the United States. Explain why this is so.



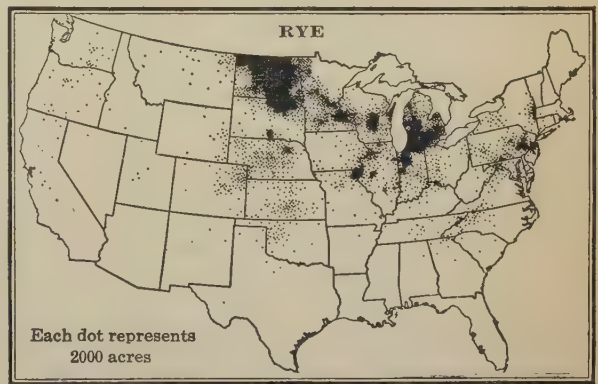
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Figure 109. A map showing where wheat is grown in the United States. Notice that wheat is raised both north and south of the corn belt. What two of the Central States are the great wheat-growing states?



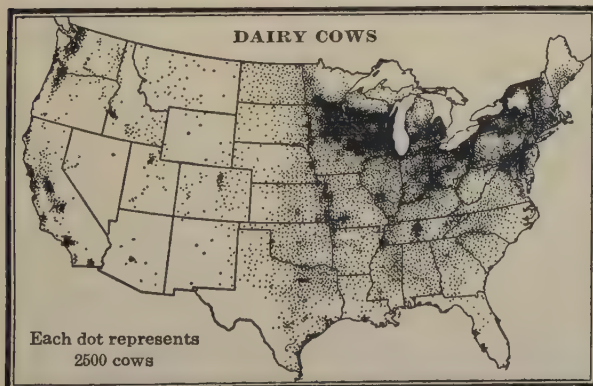
U. S. Department of Agriculture

Figure 107. A map showing the distribution of beef cattle in the United States. What part of the corn belt has the most beef cattle? Which of the Southern States raises large numbers of beef cattle?



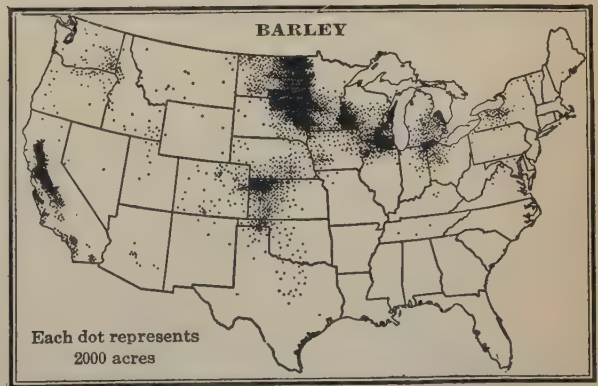
U. S. Department of Agriculture

Figure 110. A map showing where rye is grown in the United States. Compare this map with Figure 109, and you will see that much rye is raised in the northern wheat lands of the Central States.



U. S. Department of Agriculture

Figure 108. A map showing the distribution of dairy cows in the United States. Compare this map with Figure 105, and you will see that hay and dairying go together. What reason can you give for this?



U. S. Department of Agriculture

Figure 111. A map showing where barley is grown in the United States. Notice that barley is raised in the same parts of the Central States as rye. Which one of the Western States produces much barley?





## MAP STUDIES

**Foreword.** Like the Southern States, the Central States are divided into two sections by the Mississippi River. The map opposite this page and the one on page 117 show the eastern section of the Central States, and those on pages 125 and 128 show the western section.

The red lines on the economic maps (pp. 120 and 128) show the boundaries of the great agricultural regions of the Central States. The name of each agricultural region suggests the kind of farming that is most important there, but in each one so many different kinds of crops and live stock are raised that there is not room to print their names on the maps. The small maps on pages 118 and 119 will help you to discover the kinds of crops and live stock that are most important in each agricultural region, and as you read your book and study the pictures you will learn many interesting things about the farmers and their work.

**Group I** *Indiana*

1. Of the states east of the Mississippi, which one lies wholly in the Central Plains? 2. Which one lies wholly in the Central Plains except for a small area of upland in the south? 3. What two have a share of the Appalachian Plateau? 4. What ones have a share of the Laurentian Upland? 5. Is this section of the Central States mostly a land of plains, or of hills and mountains?

Now turn to page 129, and work out the map studies in Group I there.

**Group II**

1. Name the three easternmost states of the corn belt. Notice that the cities and towns are rather evenly scattered throughout this belt. 2. Find Columbus and Dayton, Ohio (F5 and E5), and Indianapolis, Indiana (D5). These are the largest cities of the eastern section of the corn belt. 3. Of the three, which two are state capitals? 4. Turn to the map on page 117, and notice that these two cities are also great railroad centers. 5. How do their locations make them convenient places to carry on state government?

Now turn to page 129, and work out the map studies in Group II there.

**Group III**

1. Find the corn and winter-wheat belt on the map and name four of the Central States which share in it. 2. Which one of these states is almost wholly in this agricultural belt? 3. What three crops do you think are most important in the corn and winter-wheat belt? 4. Find the part of the Appalachian Plateau which is in this agricultural belt. 5. What kinds of work besides farming do you expect to see there? 6. What great tributary to the Mississippi River flows through the corn and winter-wheat belt? 7. Between what states does that river form the boundary line?

Now turn to page 129, and work out the map studies in Group III there.

**Group IV**

1. Find Louisville and Cincinnati on the map (E5). 2. On what river are they located? 3. Which one is in Ohio? 4. Which one is in Kentucky? 5. Which one is located at the point where the Ohio River bends farthest north in the Central Plains? 6. Judging from the number of cities and towns clustered round Louisville and Cincinnati, which one do you think is the greater center of population? 7. Turn to the map on page 117, and notice that many railroads meet and cross in both these cities. 8. By what two means of transportation may goods be shipped to and from Louisville and Cincinnati?

**Group V**

1. What natural region borders the Central Plains on the east? 2. Which two of the Central States have a share of this plateau? 3. What three kinds of fuel are found in the plateau? 4. Compare the number of cities and towns in the plateau region of Ohio with the number in the plateau region of Kentucky. 5. In which state is the plateau thickly settled? 6. In which one is it thinly settled?

7. In the explanation in the lower left corner of the map find the red sign that stands for lake ports. 8. How many important lake ports do you find in Ohio? 9. What do lake boats bring to these ports from farther northwest in the Central States? 10. What do the boats carry as they go back up the Lakes?



Figure 112. An airplane view of the center of Indianapolis. The tall buildings are business blocks and hotels. Indianapolis is the largest city of Indiana.

**Three capital cities.** You have found that three of the large corn-belt cities are state capitals — Columbus in Ohio, Indianapolis in Indiana, and Des Moines in Iowa. You have also learned that each one is centrally located in its state and is the “hub” of a great railroad wheel. Of the three, Indianapolis is the largest city and the greatest railroad center. *See Figures 112 and 113.*

Their location and railroads have made these cities important in three ways: (1) as market centers for products of the surrounding farm lands; (2) as distributing centers for goods needed on the farms and in the smaller cities and towns of each state; and (3) as manufacturing centers. On the maps (pp. 120 and 128) find the places where these cities get coal for manufacturing.

Among the manufacturing plants in Columbus are meat-packing plants where cattle and hogs are killed and the meat prepared for use, shoe factories, and shops where railroad engines and cars are repaired. Most important of all are the foundries and machine shops

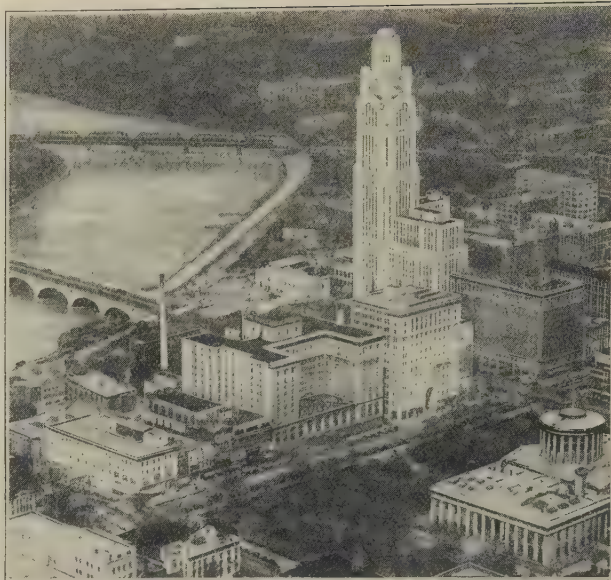


Figure 113. An airplane view of Columbus, showing a great skyscraper office building. Part of the state capitol shows in the lower right corner of the picture.

where iron and steel are molded, cut, and bent into different kinds of metal goods. Among these goods are such things as the parts of railroad engines, and the metal parts of railroad cars and farming tools and machinery. Why is Columbus a natural place for these different kinds of manufacturing?

Farther west in Ohio is Dayton, another large corn-belt city. Like Columbus, Dayton has many foundries and machine shops and a number of meat-packing plants. Its best-known manufactures are cash registers, which are sold in all parts of the country.

Among the many important manufacturing industries in Indianapolis are slaughtering and meat-packing, the making of automobiles and motor trucks, the manufacture of foundry and machine-shop products, the making of clothing and furniture, and the repairing of railroad engines and cars. Which of these industries makes use of products from the surrounding farm lands? Which ones help to supply the needs of the people on the farms and in other cities and towns of the state?





Figure 114. An airplane view of the business district of Kansas City, Missouri, looking toward the Missouri River. The bridge in the distance has an

upper level for automobiles and wagons and a lower level for railroad trains. Find Kansas City on the map on page 125 (*F6*) and notice its many railroads.

The growth of Des Moines has been much like that of Columbus and Indianapolis. Its central location and its railroads have made it the largest city and the leading business and manufacturing center of Iowa.

**Corn-belt cities farther west.** When you were studying the map, you found that three of the largest corn-belt cities are on the Missouri River. One of these is Omaha, the largest city of Nebraska. The other two are at the mouth of the Kansas River, where it joins the Missouri, and they are both named Kansas City. The larger of the two cities is in Missouri, and the other is in Kansas. But although they are in different states, they join each other and form one great business and manufacturing center. See *Figure 114*.

The map on page 125 shows that these cities are great railroad centers. Because of their location and their railroads, they are great markets for farm products and great distributing centers for manufactured goods

and other supplies needed by the people on the farms and in the smaller cities and towns of the plains. As you would expect, they carry on all kinds of business and have many wholesale and retail stores.

Omaha and Kansas City, Kansas, are centers where thousands of cattle and sheep are gathered together each year from the grazing lands farther west and then sent to corn-belt farms to be fattened. In these two cities you will see great slaughtering and meat-packing plants where millions of cattle, hogs, and sheep are killed each year and the meat prepared for shipment to all parts of the country. See *Figure 115*.

In all three cities you will see huge elevators where millions of bushels of wheat and other grains are stored waiting to be shipped away, and big mills where wheat and other kinds of grain are ground into flour and meal. In Omaha and Kansas City, Missouri, you will find factories where butter is made.



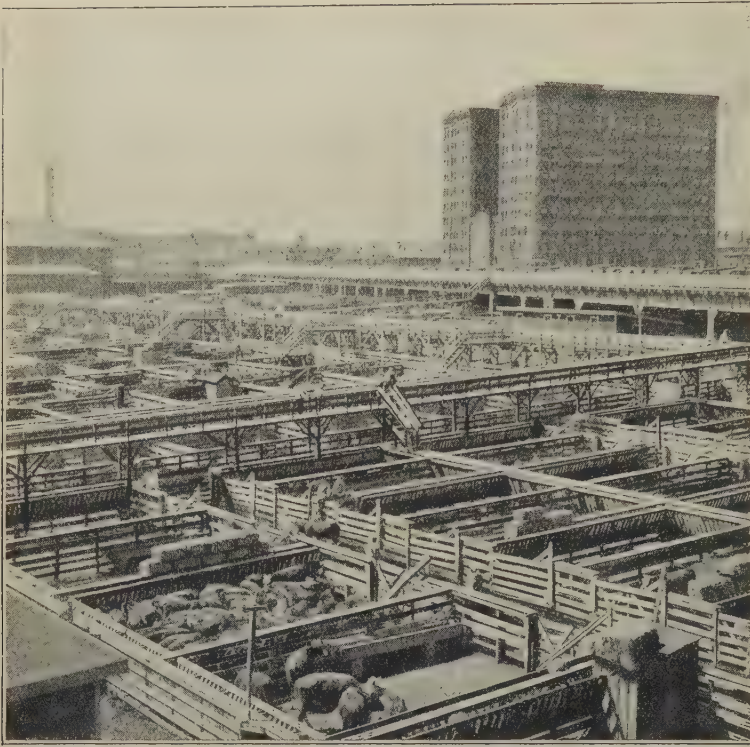


Figure 115. Part of the great stockyards at Omaha, showing the pens where the animals are kept until they go to the meat-packing plants close by. The large building is the place where the business of buying and selling live stock is carried on.

Meat-packing plants, grain mills, and butter factories are only three of the many kinds of manufacturing plants in these cities. Each one has railroad repair shops, foundries and machine shops, and many other mills and factories. Even so, the products of the meat-packing plants and grain mills are worth nearly as much as all the products of all the other manufacturing plants added together.

**Manufacturing in the corn belt — a summary.** As you think over what you have learned about the large cities in the corn belt, remember that many of their manufacturing plants make use of the products of the surrounding farm lands, and that many others manufacture goods to supply the needs of the farmers. You will understand this even better after you read about some of the other corn-belt cities in the next paragraph. As you

read, locate each city on the maps on pages 120 and 128.

Springfield, Ohio, and Peoria, Rockford, and Springfield, Illinois, manufacture farming tools. South Bend, Indiana, manufactures farm wagons, plows, and automobiles. Fort Wayne and Terre Haute, Indiana, and Sioux City, Iowa, have meat-packing plants and flour mills. Davenport, Iowa, manufactures silos, and Cedar Rapids, in the same state, has large mills for the making of oatmeal and other cereal foods.

All the corn-belt states except Nebraska have coal for power, and some of them have oil as well. Turn to the maps on pages 120 and 128, and find the coal fields and the oil fields in the corn belt. Lima, Ohio, is an oil-refining center.

**Making a corn-belt calendar.** Write the names of the months in a column on the blackboard. Talk over the

work of the corn-belt farmers with your classmates, and choose someone to write opposite each month the work that the corn-belt farmers are doing at that time. A few of the months are not mentioned in your book, but you will be able to think of work that the farmers must have to do in those months.

**Can you name these cities?** Name the corn-belt cities described below :

1. The capital and largest city of Iowa. *Des Moines*
2. The largest city of Nebraska. *Omaha*
3. The capital and largest city of Indiana. *Indianapolis*
4. Two corn-belt cities with the same name. *Springfield, Ohio and Springfield, Illinois*
5. The capital of Ohio. *Columbus*

**Some things to explain.** Explain why many corn-belt cities

- (1) are meat-packing centers ;
- (2) have flour mills ;
- (3) have butter factories ;
- (4) manufacture farming tools.

*because Omaha is on a river*









Figure 116. Farmers planting wheat with machines known as "drills." As the drills move across the fields, they drop the seeds in furrows in the soil and cover them with earth. Many farmers use horses instead of tractors to pull the drills.

### 3. THE SOUTHERN PART OF THE CENTRAL STATES

If you travel from western Kansas to eastern Kentucky, you will find greater differences in surface than you did in the corn belt, and greater differences in the work of the people. This trip will take you through the southern part of the Central States. Begin your study of this section by working out the map studies in Group III on page 121.

**Winter-wheat lands.** South of the western part of the corn belt are the greatest winter-wheat-growing lands of the United States. The center of the winter-wheat lands is in Kansas, but they extend northwestward into Nebraska and southward into Oklahoma and Texas. They are lands of huge farms, some of which cover a square mile or more. Except in the east, they have too little rain in summer for the best growth of corn, but they have enough rainfall in spring for wheat. That is the principal reason why wheat is the leading crop. Kansas, which has the largest share of the winter-wheat

lands, is one of the two leading wheat-growing states of our country.

**The wheat farmer and his work.** The winter-wheat farmer plows his land and plants the seeds in the autumn. The planting is done by means of machine "drills" such as you see in Figure 116. In a few weeks' time the fields are green with the little blades of wheat, which look much like blades of grass. They grow to be several inches high, and then, when the colder weather comes, they droop. They do not die, but simply rest during the cold weather.

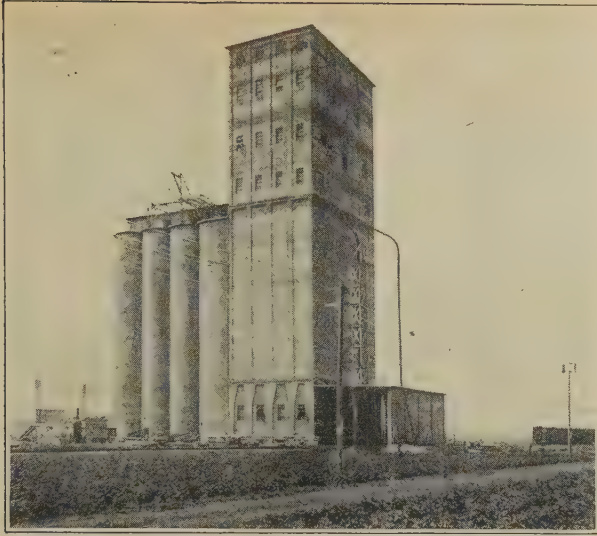
When spring comes and the sunshine warms the soil, the wheat begins to grow again. As it ripens, it changes from green to golden yellow, and by late June or early July it is ready to be harvested. Figure 117 shows how some of the farmers harvest and thresh their wheat. Many others use separate harvesting and threshing machines.

It is because the winter-wheat lands are so level that all the "wheat work" can be done by machinery. By using machines to



Figure 117. Kansas farmers harvesting wheat with a harvester-thresher. As this machine moves across the fields, it not only cuts the wheat but threshes it as well. The wagon drawn along at the side catches the wheat as it comes from the thresher.





Courtesy of Atchison, Topeka & Santa Fe Railway

Figure 118. A grain elevator in the wheat lands. The farmers haul their wheat to the elevators, where it is stored until it is taken away by freight trains.

prepare the land, plant the seed, and harvest the grain, the farmers can care for many more acres of wheat than they could if they had to do part of the work by hand. That is one reason why the wheat farms are so large.

**Marketing wheat.** Along the railroads that pass through the winter-wheat lands are many grain elevators like the one shown in Figure 118. When a farmer hauls his wheat to the nearest grain elevator and sells it, he never knows where it will be used. Possibly it will make only a short trip to the flour mill in a neighboring town, and if so, the farmer may later buy flour made from his own wheat. There is a much greater chance that it will go to mills in the larger cities, such as Omaha or Kansas City. There it will be ground into flour which may be sent to almost any part of the United States or to some distant land. Perhaps it will not be ground into flour in this country at all, but will be sent to a seaport to be exported to some other country.

**Other crops in the winter-wheat lands.** Although wheat is the principal money crop in the wheat lands, most of the farmers carry on mixed farming, using some of their land for

pasture and some for crops to feed and fatten live stock. In the moister eastern part many of the farmers raise corn, but in the drier western part Kafir corn and other sorghums which use less moisture take the place of corn. Alfalfa is an important hay crop, and is a money crop on some of the farms.

So many cattle are raised and fattened on the farms that next to the corn belt the winter-wheat lands are the most important beef-producing section of the country.

When you think of the corn belt and the winter-wheat lands, remember that great quantities of grain and meat are produced in both. Do not forget, however, that the corn-belt farmers earn the most money by selling corn-fed animals, while the farmers of the winter-wheat lands earn the most by selling wheat.

On the map on page 128 find Wichita, Kansas (E7). This is the largest city of the winter-wheat lands. What kind of mills should you expect to see in Wichita?

**Kansas oil fields.** The southeastern part of Kansas belongs to the great mid-continent oil field which supplies more than half of all the petroleum produced in the United States. Figure 119 shows what you will see in traveling through the plains in this part of the state.

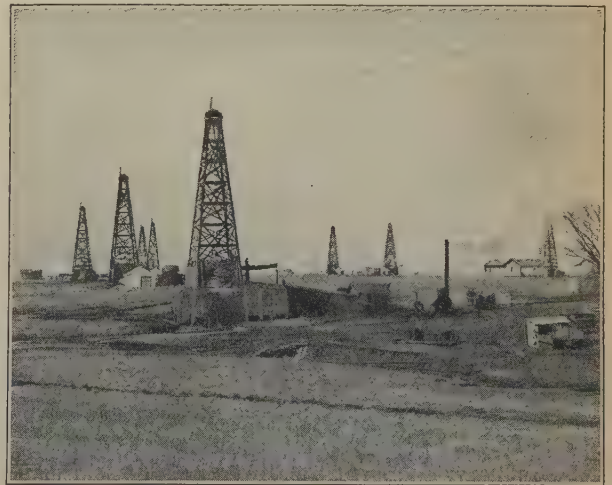


Figure 119. Oil wells in the farm lands of Kansas. Wherever large quantities of oil have been found, the farmers have sold their land to the oil men.





**The corn and winter-wheat belt.** If you travel eastward from central Kansas, you will pass through the part of the Central States that lies in the *corn and winter-wheat belt*. As the name suggests, the two leading crops of this belt are corn and winter wheat. The wheat is grown as a money crop, and the corn is used mostly to feed and fatten live stock. In the parts that lie in the Central Plains many of the farms are much like those of the corn belt. In the upland regions the farms are rather different.

**The Ozark Plateau and its farms.** Parts of the Ozark Plateau of Missouri are very rough, and the rough surface hinders farming and transportation. The farms in these parts are small. Nearly every farmer has a cornfield, — often on a steep hillside, — a hayfield, a little pasture land, and a wood lot.

Corn is the principal crop, and it provides food for the people and feed for the live stock. Most of the farmers keep a few cattle and a larger number of hogs, selling some each year. During the warmer months the cattle graze in the pastures, and in winter they are fed on hay and corn. The hogs are turned loose in the oak forests to eat the acorns that fall from the trees, but they are fattened on corn before they are sent to market.

In winter some of the farmers cut a little timber in their woodlots and sell it. Thus, by selling a few live stock and a little timber each year, the Ozark farmers manage to make a living on their rough lands.

**Ozark fruit crops.** All through the Ozark region the farmers are learning that their hilly lands are better suited to tree crops than to any other kind, and some of them are finding that they can make a better living by growing fruit than by raising grain. Many of the farmers have peach orchards, and some raise strawberries, but apples are the most important fruit crop. See *Figure 120 on page 130*.

## MAP STUDIES

*Group I*

1. What state west of the Mississippi River lies wholly in the Central Plains? 2. Find the brown line that runs from north to south on the map. 3. What are the plains west of that line called? 4. What four states lie partly in the Central Plains and partly in the Great Plains?

5. What states that lie mostly in the Central Plains have a share of the Laurentian Upland? 6. In what state is most of the Ozark Plateau? 7. What state has a small region of young, rugged mountains within its borders? 8. What picture does this map and the one on page 120 give you of the surface of the land in the greater part of the Central States?

*Group II*

1. Notice that in the western section of the corn belt, as in the eastern section, the cities and towns are rather evenly scattered over the plains. 2. Find Kansas City, Missouri, and Kansas City, Kansas (*F6*), Des Moines, Iowa (*G5*), and Omaha, Nebraska (*E5*). These are the largest cities of the western section of the corn belt. 3. Which of them is a state capital? 4. On what river are the other three located? 5. Turn to the railroad map on page 125, and tell whether or not these four corn-belt cities are railroad centers.

*Group III*

1. What two of the Central States west of the Mississippi River have a share in the corn and winter-wheat belt? 2. In which one of them is much of this farming belt an upland? 3. In what part of the corn and winter-wheat belt do you expect to see oil fields? 4. What is the leading crop in central and western Kansas?

*Group IV*

1. Find St. Louis on the map (*H6*). 2. In what state is it? 3. Near the mouth of what great tributary to the Mississippi River does it stand? 4. What city is just across the Mississippi from St. Louis? 5. In what state is that city? 6. Turn to the map on page 125 and notice that St. Louis and East St. Louis are large railroad centers. Notice also that St. Louis can be reached by river boats from all directions.



Figure 120. Picking strawberries on a fruit farm in the Ozark Plateau. Notice that the berries are grown between the rows of fruit trees. What Southern states share the Ozark Plateau with Missouri?

**Work in the forests.** Much of the plateau is forested, and lumbering is carried on in many places. Because the land is rough and there are few railroads, the lumbering companies use portable, or movable, sawmills which can be moved from place to place. The sawmills are set up wherever the lumbermen are at work, and the logs are sawed into lumber there.

**Ozark mines.** Turn to the map on page 128 and find the places in the Ozark Plateau where zinc and lead are mined. The southwestern mining district of Missouri extends across the state boundaries into the neighboring sections of Kansas and Oklahoma, and it produces about half of all the zinc mined in the United States. The southeastern district produces nearly a third of all the lead mined in the United States, and makes Missouri the leading state in the production of this metal. See *Figure 121*.

**St. Louis.** On the Mississippi River, just beyond the northeastern end of the Ozark Plateau, is the great city of St. Louis. Before

you read about St. Louis, turn to page 129 and work out the map studies in Group IV.

The map shows that other cities and towns cluster closely around St. Louis. The largest of the neighboring cities is East St. Louis, across the Mississippi River in Illinois.

Its location on the Mississippi, between the mouths of the Ohio and Missouri rivers, made St. Louis the great river port of the Central Plains in the days before railroads. As the surrounding plains were settled and turned into farm lands, St. Louis became a market for farm products and a distributing point for manufactured goods from the East. For many years most of its trade was carried on by boat, and the river front was the busiest part of the city.

After railroads were built across the Central Plains, travel and transportation on the rivers grew less and less. But for St. Louis the railroads meant greater growth. It was already the leading trading center on the Mississippi, and it soon became the principal railroad center. Its river trade grew less, but the railroads



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Figure 121. A zinc and lead mine near Joplin, the center of the mining district of southwestern Missouri. At the left is the tall shaft house over the mine, and at the right you can see part of the smelter where the metal is separated from the ore.





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Figure 122. Part of the river front and the business section of St. Louis. St. Louis is one of the greatest business centers of the Central States, with large numbers of wholesale and retail stores. From its

wholesale stores many kinds of goods are distributed to other cities and towns in the Central States and in the South. What reason can you give to explain the importance of St. Louis as a distributing center?

brought more people and more business. Today St. Louis is one of the ten largest cities in the United States. See *Figure 122*.

Like Kansas City and Omaha, St. Louis is a great market for cattle and other live stock, and one of the chief centers for receiving cattle and sheep from the Great Plains and distributing them to the corn-belt farms for fattening. In East St. Louis there are large slaughtering and meat-packing plants.

In all, St. Louis has over two thousand manufacturing plants. Among the many different products which they turn out, automobiles and motor trucks, shoes, and clothing are very important. More shoes are made here than in any other city of the Central States. Foundries and machine shops make

many different kinds of iron-and-steel goods, and railroad shops manufacture railroad cars. Flour mills make use of grain from the surrounding farm lands, and furniture factories and other wood-working plants use lumber from the Ozark region and elsewhere.

The principal reason why St. Louis manufactures so many different things is because it is such a great railroad center, and can get raw materials and market manufactured goods so easily. Another reason is that power is easily supplied to its mills and factories. Coal comes from Illinois, which stands third among all the states in coal-mining. Oil comes from the mid-continent field, and hydroelectric power from a great power plant on the Mississippi River at Keokuk, Iowa.



Figure 123. Curing tobacco in Kentucky. Where is the other great tobacco-growing section of the United States?



Figure 124. Beef cattle in a pasture in the blue-grass country of Kentucky. Many beef cattle are raised in the blue-grass country, and many from the Western plains are fattened there.

**Some famous tobacco lands.** Parts of the corn and winter-wheat belt east of the Ozark Plateau have rich limestone soils which are especially well suited to tobacco. If you travel through the plains of Kentucky, you will see acres and acres of tobacco fields, with big barns where the tobacco is cured. In the cities and towns you will see the warehouses where the farmers send their tobacco to be sold. See *Figure 123*.

The tobacco lands begin in northwestern Tennessee and stretch northeastward in a broad belt across Kentucky. This is one of the two greatest tobacco regions of the country, and Kentucky is one of the two leading states in the production of tobacco. Find these tobacco lands on the map on page 120. Notice that tobacco is also raised in southwestern Ohio. What Southern state is one of the two leaders in tobacco-growing?

**The blue-grass country.** The richest section of the limestone plains is in the north-central part of Kentucky. This section is called the "blue-grass country" because of the bluish-green grass that grows there. Its center is near Frankfort, the capital of Kentucky, and

it extends eastward to the Appalachian Plateau and northward and westward to the Ohio River.

The blue-grass country is a mixed-farming section, and tobacco is the principal money crop. Since tobacco-growing needs much hand work, many of the landowners employ croppers just as many of the Southern cotton planters do. Each cropper rents as much tobacco land as he and his family can care for. He receives part of the money from the sale of the tobacco as his pay. The rest goes to the owner of the land.

On most of the farms you will see herds of cattle or flocks of sheep, for the blue grass makes rich pasturage. Many of the blue-grass farmers buy cattle from the West and fatten them for market, as the corn-belt farmers do. Some also raise "corn-fed" hogs, and a few specialize in raising beautiful saddle horses and racing horses. See *Figure 124*.

Wheat is a money crop of some importance in the blue-grass country, but tobacco and corn are the great crops of the region, and the farmers depend chiefly on the sale of tobacco and live stock for their living.



**Two cities of the Ohio valley.** You have already learned that the Ohio River is the largest tributary to the Mississippi from the east, and that the river and its valley very early became a busy route of travel and transportation. The largest cities in the Ohio valley are Cincinnati, Ohio, and Louisville, Kentucky. Before you read about these cities, turn to page 121 and work out the map studies in Group IV.

Louisville grew up as a river port in the days before railroads. It is located at a point where the Ohio River flows over rock ledges, forming rapids which are known as the Falls of the Ohio. Since steamboats going up or down the river could not pass the falls, they had to stop here, and their cargoes had to be unloaded and carried round the falls. It was natural, then, that a town should grow up where boats from upstream and downstream stopped to exchange passengers and goods.

While Louisville was growing as a river port, the blue-grass country and neighboring parts of the Ohio valley were being settled and turned into farm lands. Because of its location and river trade, Louisville became a market center for the surrounding farm lands, and a distributing point for manufactured goods from the East. Then came the railroads. Little by little they took the place of river boats in carrying freight, and changed Louisville from a busy river port to an even busier railroad center. *See Figure 125.*

Louisville is one of the two greatest tobacco markets in the United States, and manufactures large quantities of cigars and cigarettes. Why is Louisville a natural center for this kind of manufacturing? What is the other leading tobacco market of the United States?



*Courtesy of Bylesby Engineering and Management Corporation*

**Figure 125.** Part of Louisville, looking toward the Ohio River. The falls are a little farther downstream, beyond the left margin of the picture. A canal for river boats has been built around the falls. How does this make the river more useful?

Besides the tobacco factories Louisville has many other manufacturing plants. Among them are shops where railroad engines and cars are repaired, petroleum refineries, meat-packing plants, foundries and machine shops, and mills for the manufacture of lumber products. Why is railroad repair work important here? What do you find on the map on page 120 that explains the importance of petroleum-refining?

Like Louisville, Cincinnati grew up as a river port and later became a railroad center. In the days before railroads its location on the big bend of the Ohio River opposite the mouth of the Licking River made it a convenient place for collecting the products from a large area of farm lands both north and south of the Ohio and sending them eastward by boat. For the same reason it was a convenient place for distributing to the farm lands manufactured goods from the East. When railroads were built they took away much of Cincinnati's river trade, but they increased its importance as a market center and a distributing point.



Figure 126. Part of the river front at Cincinnati, showing some of the boats which run up and down the Ohio River. Along the narrow strip of lowland bordering the river there are manufacturing plants and

wholesale warehouses. From the lowland the land rises steeply to a shelflike terrace where the principal business district is located. Rising above the terrace are hills providing pleasant places for homes.

Today Cincinnati is the second largest city of Ohio, and the great business and manufacturing center of the southwestern part of the state. Most of its trade is now carried on by rail, but if you should visit the water front, you would see that the city is still a river port of some importance. Passenger boats run between this city and Pittsburgh, and barges bring coal and other bulky products to its wharves. *See Figure 126.*

As you would expect, Cincinnati has hundreds of manufacturing plants. Among them are meat-packing plants and many mills and factories which manufacture things needed by the people on the farms and in the smaller cities and towns of the surrounding plains. Among these things clothing and shoes, automobiles and motor trucks, and many kinds of metal products are especially important. You must not think, however, that Cincinnati trades only with the surrounding territory. Many of its manufactured goods go to distant parts of the United States, and some to far-away lands.

*Describing an airplane trip.* Imagine that you are an aviator like Colonel Lindbergh, and that you have just flown from western Kansas to the blue-grass country of Kentucky. Use your maps to describe your trip, telling what you saw as you looked down on the winter-wheat lands, the plains of eastern Kansas, the Ozark Plateau, and the limestone plains of Kentucky.

*Sentences to complete.* Prove that you have learned the important facts about the southern part of the Central States by completing the following sentences :

1. Large quantities of winter wheat are grown in Kansas because .....
2. Fruit crops are important in the Ozark Plateau because .....
3. The limestone plains of Kentucky are great tobacco-growing lands because .....
4. St. Louis is a great distributing center and a great manufacturing center because .....
5. An important mineral product of eastern Kansas is .....
6. The two largest cities of the Ohio valley are ..... and .....
7. Two important mineral products of the Ozark Plateau are .... and .....



#### 4. THE APPALACHIAN PLATEAU AND THE LAKE SHORE OF OHIO

In studying about the Middle Atlantic States and the Southern States you learned that the Appalachian Plateau is a great storehouse of fuels. Two of the Central States have a share of this region. Do you know what two they are? Think over what you already know about the plateau, and name the kinds of work you expect to find the people doing in this region of the Central States.

When you visited Buffalo, you learned that the level plain along the southern shore of Lake Erie is part of the greatest route of travel and transportation between the East and the Central Plains. Can you think of any ways in which work in the cities on the lake shore of Ohio may be connected with work in the Appalachian Plateau?

Begin your study about this eastern part of the Central States by working out the map studies in Group V on page 121.

**Farm lands of the plateau.** The part of the Appalachian Plateau in Kentucky has been so deeply cut by rivers that it is more commonly called the "Kentucky mountains." The roughness of the land is a great hindrance to farming and transportation. The only sections which have railroads are those where coal is mined, and most of the roads are poor. For this reason the farms are small and the region is thinly populated.

The part of the plateau in Ohio is a hilly upland like the neighboring parts of Pennsylvania and West Virginia. While it is not so rough as the part in Kentucky, much of the land is better suited to pasture than to the growth of crops. In traveling through the northern part, where there are the most cities and towns, you would see herds of dairy cows grazing in the pastures. Farther south you

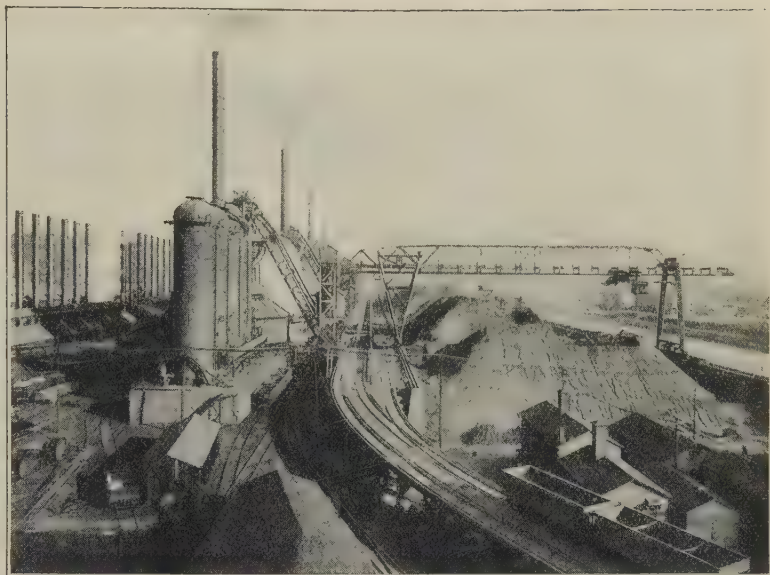
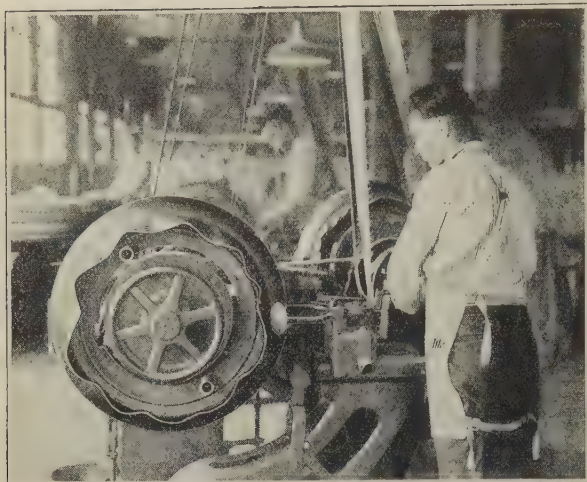


Figure 127. Blast furnaces at Youngstown. At the right are huge piles of iron ore. Youngstown also has large steel mills and is one of the greatest iron-and-steel manufacturing cities of the country.

would see flocks of sheep which are raised for their wool. The plateau region in the eastern part of Ohio and the neighboring part of Pennsylvania is the most important wool-producing section of the United States east of the Mississippi River.

Besides the dairy cows and sheep, you would see a good many beef cattle on the farms. During the warmer months all the live stock graze out of doors, but in the winter they must be fed in the barns. Therefore the farmers use most of their crop land to raise feed crops — chiefly corn and hay.

**Mining in the plateau.** Of the three fuels found in the Appalachian Plateau, coal is the most important. Much of the oil and gas has been used up, and much larger quantities are produced in other parts of the country. The Appalachian coal fields, however, are the most important in the United States, and there are many coal mines in the plateau of Kentucky and Ohio, just as there are in the neighboring parts of West Virginia and Pennsylvania. These four states produce more than half of all the soft coal mined in the country.



Courtesy of Goodyear Tire and Rubber Co., Inc.

**Figure 128.** Making automobile tires at Akron. Four fifths of all the factory workers in this Ohio city are in the tire factories. Perhaps some garage-owner near your home can show you tires made in Akron.

**A great iron-and-steel district.** You will remember that much of the coal of the Appalachian Plateau is good coking coal, the kind needed in smelting iron ore. You will also remember that much of the iron ore that comes down the Great Lakes to the ports of Ohio is sent to the Pittsburgh iron-and-steel district. Large quantities are also sent to Youngstown and other cities in the plateau region of Ohio. There it meets the coke, and is changed into pig iron in big blast furnaces. *See Figure 127.*

Find Youngstown on the map on page 117 (G4). Notice that this great iron-and-steel center is located on the most direct railroad route between Cleveland, the greatest iron-ore port on Lake Erie, and Pittsburgh, the greatest center for the shipment of coking coal. Do you see how well placed it is for bringing together the raw material and the fuel needed for the iron-and-steel industry?

The principal iron-and-steel district of Ohio extends from Youngstown to Cleveland, but many cities farther south in the plateau are also centers of this industry. Ohio is second only to Pennsylvania in the manufacture of iron and steel.

**Akron and its rubber-manufacturing.** The largest city in the plateau region of Ohio specializes in an entirely different kind of manufacturing. This city is Akron, which makes so many automobile tires that you may think of it as the "tire city" of the United States. It also makes many other kinds of rubber goods, and is the greatest rubber-manufacturing center of the whole world. *See Figure 128.*

There are two reasons why Akron leads in rubber manufactures. One is that long before there were any automobiles one of the first successful rubber factories happened to be started in this city. The other is that the leading centers of automobile manufacture are cities in the eastern part of the Central Plains.

When automobiles began to be manufactured successfully in cities in the neighboring plains, the rubber factories in Akron began to make tires and inner tubes, and their business grew very fast. Today the making of tires and tubes is by far the most important kind of rubber-manufacturing in the United States. Many other cities manufacture these products, but Akron, with its early start, has kept far ahead of them all.

**Ohio's largest city.** Find Cleveland again on the map on page 117 (G4). Notice that it is located on the shore of Lake Erie at the place where railroads from the West meet to pass eastward along the narrow part of the Lake Plain. This location has helped to make Cleveland an important lake port, a great manufacturing center, and one of the largest cities of the United States.

On the map find the river which flows into Lake Erie at Cleveland. This is the Cuyahoga River. The lower part of it has been made deep enough for large boats, but it is narrow and winding, and it does not provide enough space for all the piers and wharves that are needed for Cleveland's lake trade. Figure 129 will show you what the people





Fairchild Aerial Surveys, Inc.

Figure 129. Part of the business district and the lake front at Cleveland. At the left is the Cuyahoga River, which forms part of Cleveland's harbor. Some distance from the lake shore a long wall, or breakwater,

has been built to provide a large outer harbor. Find the breakwater and the piers along the shore of the outer harbor. What do you see that proves that boats and trains meet and exchange goods at the piers?

of Cleveland have done to make a larger harbor and a longer water front for ships.

If you should visit the water front at Cleveland, you would see the big ore boats unloading iron ore which they have brought down the lakes from the mines near the western end of Lake Superior, and you would learn that they go back up the lakes loaded with coal which has come to Cleveland by train from the Appalachian Plateau. So much iron ore comes to Cleveland by boat, and so much coal is shipped away, that this city is often called a "coal-and-iron port."

As you know, much iron ore goes by train from Cleveland to cities in the Appalachian Plateau. But Cleveland itself is a great iron-and-steel center and uses large quantities of

iron ore in its own blast furnaces. Besides blast furnaces, Cleveland has steel mills, and many foundries, machine shops, and other factories where products of iron and steel are made. Among the manufacturing plants which make use of large quantities of iron and steel, automobile factories are the most important. Cleveland ranks high among the leading automobile-manufacturing cities of the United States.

Although Cleveland has hundreds of other mills and factories, and manufactures a great variety of products, iron and steel and products made from them are by far the most valuable. You may think of Cleveland, therefore, as a great coal-and-iron port and a great iron-and-steel manufacturing city.





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Figure 130. An airplane view of part of Toledo. This city has a good harbor on Lake Erie, with an inner harbor on a river which flows into the lake. In this picture you see part of the inner harbor.

What kinds of work do you think are important in Toledo?

**Other Ohio ports.** All the larger cities along the lake shore of Ohio are coal-and-iron ports, although none is so important as Cleveland. More than three fourths of all the iron ore shipped down the Great Lakes from the mines near Lake Superior comes to these ports, and most of the coal from the Appalachian Plateau which moves northwestward on the lakes is shipped from their wharves. Several of them receive wheat by boat from ports on Lake Superior, and all of them are busy manufacturing centers.

The second largest of the lake-shore cities of Ohio is Toledo. Find this city on the map on page 117 (*F4*). Notice that it is located at the western end of Lake Erie, and is a great railroad center. Then study Figure 130.

Toledo carries on many different kinds of manufacturing, but its leading manufactures are products of iron and steel. Can you explain why? Among its other kinds of manufacturing industries, flour-milling is especially important. Suggest two ways in which wheat for the flour mills reaches Toledo.

*Something to prove.* You have learned that work in the Appalachian Plateau is closely connected with work in the cities on the lake shore of Ohio. Prove that you understand this connection by completing the sentences below. Write out the sentences, filling the blank spaces with the right words.

1. The mines in the plateau furnish \_\_\_\_\_ for smelting \_\_\_\_\_ in the cities on the lake shore.

2. The lake-shore ports send \_\_\_\_\_ to the iron-and-steel centers of the plateau.

3. The lake-shore ports serve as gateways for the shipment of \_\_\_\_\_ from the mines in the \_\_\_\_\_.

4. Pittsburgh gets \_\_\_\_\_ from Cleveland, and Cleveland gets \_\_\_\_\_ from Pittsburgh.

## 5. CHICAGO — THE GREAT CENTRAL MARKET

You have already visited some of the large cities of the Central Plains and learned about the different kinds of work that the people do. Now you are going to visit the largest one of all — Chicago, which is often called the Great Central Market. What does that name suggest to you about work in Chicago?

Begin your study of Chicago by finding it on the map on pages 198–199 (*J2*). In what state is this city? Near the southern end of what lake is it located? Is Chicago a lake port? Compare the number of railroads that meet in this city with the number which meet in the other cities of the Central States.

Of the five Great Lakes, Lake Michigan extends farthest south into the heart of the Central Plains. In the days before railroads, when people from the East were moving west to make new homes in the plains, why was it natural for a lake port to grow up near the southern end of Lake Michigan? What kinds of work would such a port carry on? Why might such a port, in time, become a great railroad center? Find answers to these questions as you read about Chicago.





© Chicago Aerial Survey Co.

**Figure 131.** An airplane view of the center of Chicago. The tall buildings are hotels, theaters, stores, banks, and business offices. The stream in the picture is the south branch of the Chicago River. Where it bends to the east to enter the lake it is joined by the north

branch. The main stream and the two branches form an inner harbor for Chicago. Find the outer harbor and the long breakwaters which protect it. Find also the freight yards on both sides of the river and along the lake front. What kind of work do they suggest?

**The story of Chicago.** In the year 1804 the United States Government built a fort at the mouth of a little river that flowed into the southern end of Lake Michigan. A village grew up round the fort, but it was very small until steamboats began to arrive from Buffalo, bringing settlers from the East who were going farther west. Then it began to grow. Soon it became the port of Chicago, because it was the point farthest southwest in the plains to which people could travel by lake boat. Boats from the East unloaded passengers and goods there, and westward-moving settlers bought the things they needed for their journey.

As the plains farther west were settled and turned into farm lands, Chicago became the chief center for the shipment of grain and live stock by boat to the East, and for the distribution of manufactured goods which the boats brought from the Eastern cities. Then came the railroads. Since Chicago was already the chief market center of the plains, it became the great meeting place for railroads from the East, the South, and the West.

Today Chicago is the second largest city in the United States, and the fourth largest in the world. It is also the largest railroad center of the United States, and the second greatest manufacturing center. *See Figure 131.*





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Figure 132. A relief map showing the location of Chicago. Notice that the city is built on level land bordering the lake, where it has had plenty of room to grow. On this map find the part of Chicago shown

in Figure 131, where the Chicago River flows into Lake Michigan. From that place the city stretches northward to Evanston, and southward almost to the city of Whiting, which is in the state of Indiana.

**The center of the city.** In Figure 131 you were looking down on the center of Chicago where the principal business district is located. From there the city spreads far to the north and south along the lake shore. Figure 132 will show you more about Chicago as a whole. Study the map and its legend.

Figure 132 shows that the Chicago River and its branches divide the city into three sections. These are known as the North Side, the West Side, and the South Side. They are connected by tunnels under the river and its branches, and by bridges over them. Find some of the bridges in Figure 131. Notice

that the principal business district is located where the three "Sides" of the city meet.

**Chicago's water front.** The North Side of Chicago, which stretches northward from the mouth of the Chicago River, has many hotels, apartment houses, and beautiful homes. The South Side is somewhat the same, but the lake shore is lined with the tracks of some of the railroads which come into Chicago from the South and East.

At the southern end of the city, in the part known as South Chicago, there is another harbor, formed by the river which flows from Lake Calumet into Lake Michigan. Find this



harbor in Figure 132. The northern harbor is used mostly by boats which carry passengers and small freight. At the docks of the southern harbor you will see lake freighters unloading iron ore, and others taking on wheat and corn to be shipped eastward, principally to Buffalo.

**Manufacturing.** At South Chicago there are blast furnaces and steel mills which make Chicago one of the great iron-and-steel centers of the country. Limestone as well as iron ore comes to the blast furnaces by boat. Most of the coal or coke, however, comes by train, — some from the mines in southern Illinois, and some from the Appalachian Plateau. Some of the iron and steel goes to foundries, machine shops, and other manufacturing plants in Chicago which make products of these metals, and much is sent by train to other manufacturing cities.

Few visitors in Chicago go to see the iron-and-steel plants, but many visit the great meat-packing plants. Meat-packing is Chicago's greatest industry. Every year hundreds of thousands of well-fattened cattle, hogs, and sheep come to its stockyards, and millions of pounds of meat and lard are sent to all parts of the United States and even to Europe from its meat-packing plants. *See Figure 133.*

All together, Chicago has over ten thousand manufacturing plants, and it would be hard for you to think of anything that is not made there. Because the city itself is so large and is surrounded by so many other cities and towns, foodstuffs, clothing, and furniture are important manufactures. No other city in the country makes so many kinds of farming machinery as Chicago, and no other city in the world manufactures so much telephone equipment.



Figure 133. Stockyards and meat-packing plants in Chicago. Meat and lard are the principal packing-house products, but all parts of the animals are used in some way, and nothing is wasted. For example, buttons and knife handles are made from the bones, glue from the hoofs, and stuffing for mattresses from the hair.

Because Chicago is such a great railroad center, all kinds of railroad work are important. Thousands of men work in the shops where steam and electric cars are built and repaired, and many others work in the railroad yards, tending switches and signals, helping to shift freight cars from track to track, and doing other kinds of railroad work.

**The Great Central Market.** Great as Chicago is as a manufacturing city, it is even greater as a market center, for its business companies handle much of the buying and selling of the farm products of the interior plains. Large quantities of grain and live stock come to the city itself to be sold, and arrangements for buying and selling millions of bushels of grain which do not even pass through Chicago are made by the business companies there.

Chicago is also the greatest center for the buying of manufactured goods by the people of the cities and towns in all parts of the plains. Many of the things distributed from Chicago

by train are products of its own mills and factories, but even more come from other parts of the country, — mostly from the manufacturing centers of the East. Wholesale companies in Chicago buy these goods from the manufacturers and sell them to retail dealers in other cities and towns.

You can see now why Chicago is called the Great Central Market. You must remember, however, that it is a great market center because it is a great railroad center, and it is a great railroad center because of its location in the interior plains.

**Chicago's neighbors.** Turn to the map on page 120, and notice how many cities and towns are clustered round Chicago. Some of them are principally residential places, where people who work in Chicago make their homes. Others are busy manufacturing centers.

On the map on page 120 find the city of Gary, Indiana (*D4*). Notice its location at the southern end of Lake Michigan. A great iron-and-steel company chose this location for its blast furnaces and steel mills for two reasons: (1) it was a convenient place to bring together iron ore from the Superior mines and coking coal from the Appalachian Plateau; and (2) it was centrally located for the distribution of the steel products. The steel plant here is the largest in the world.

**Giving endings.** Each sentence below needs an ending. Can you end each one correctly?

1. Chicago began its growth as a lake port because .....
2. Later Chicago became a great railroad center because .....
3. Chicago is a great manufacturing center because .....
4. Chicago has large meat-packing plants because .....
5. South Chicago is an iron-and-steel center because .....
6. Chicago is called the Great Central Market because .....

## 6. THE NORTHERN PART OF THE CENTRAL STATES

On Figure 196 on page 201 find the great agricultural section of the United States known as the *hay and dairying belt*. Notice that it stretches across the northern part of the United States from New England to western Minnesota. What three of the Central States have a large share in this belt?

Michigan, Wisconsin, and Minnesota are often called the Lake states because they border the three largest of the Great Lakes. Turn to the map on page 120 and find the Strait of Mackinac, which connects Lake Michigan and Lake Huron (*E2*). Notice that this strait divides Michigan into two parts. The southern part, between Lake Huron and Lake Michigan, is called the "lower peninsula." The northern part, between Lake Michigan and Lake Superior, is called the "upper peninsula."

Figure 196 on page 201 shows that west of the hay and dairying belt are the *spring-wheat lands*. What one of the Lake states has a share in this wheat-growing section? What two states still farther west have a large share of the spring-wheat lands?

The Lake states and the Dakotas are the northernmost of the Central States. How do you think their growing season compares in length with the growing season in the corn-belt states? Check your answer by Figure 195 on page 200. Then study Figure 194 on the same page. How does the rainfall in the Lake states compare with the rainfall in the Dakotas?

Before you begin to read about the northern part of the Central States, study the maps on pages 120 and 128, and tell what other kinds of work besides farming you expect to find there.

**The plains of the Lake states.** If you should travel across the plains of the Lake states, you would find them somewhat more hilly than the plains farther south and west. You would also find that they have thousands of lakes and ponds, and much swampy land which cannot be used for farming until it is drained.





Figure 134. A herd of cows on a dairy farm in Wisconsin. They are feeding on sweet clover which the farmer planted for pasturage. Next year he may use

this field for corn or oats, and pasture his cows on other parts of the farm. Changing the crops in the fields each year helps to keep the soil in good condition.

You would find too that the climate differs somewhat from that of the corn-belt states. The greater part of the Lake states has less than five months without frost. Except in the southern part of these states, the growing season is too short for corn to ripen, and the winters are too cold for winter wheat. The rainfall, however, is enough for almost all kinds of crops.

**A great dairying section.** You have discovered from the map that the hay and dairying belt includes the greater part of the Lake states, but that it does not include all the plains of Minnesota. That state has a share of the corn belt and a share of the spring-wheat lands.

As you may guess from its name, the hay and dairying belt is a great dairying section. One reason for this is that its climate is excellent for the growth of hay and grass. Another reason is that its surface is somewhat more hilly than that of the corn belt or the wheat lands, and the rougher parts make better pasture lands than crop lands.

There are so many dairy farms in the Lake

states that they produce one fourth of all the milk sold in the United States, one third of all the butter, and three fourths of all the cheese. Wisconsin is the leading dairying state of the whole country.

**The dairy farmer and his work.** The dairy farmer uses much of his land for pasture, where his cows graze during the warmer part of the year. The pastures may be the hilly or swampy parts of the farm which are least well suited to crops, or they may be fields which the farmer uses some years for crops and other years for pasture. *See Figure 134.*

During the summer, while the cows are grazing out of doors, the farmer is busy raising crops to feed them in the winter. He uses most of his crop land for hay and corn. After the hay has been cut, it is dried in the sun and stored away in the barn. Much of the corn is harvested while it is green, and stored in a silo. Such feed, as you know, is called *ensilage*. *See Figures 135, 136, and 137.*

The dairy farmer is busy the whole year round. The cows must be milked night and morning, every day in the year, and during the



Figure 135. Dairy farmers gathering their hay crop. As they drive across the fields, the loader attached to the back of the wagon loads it with hay ready to be taken to the barn.



Figure 136. Harvesting corn on a dairy farm. The farmers cut the corn with a harvesting machine, load it on wagons, and carry it to the silos, which are close to the barns.



Courtesy of Oscar H. Smith, Commissioner of Immigration, State of Minnesota

Figure 137. Filling a silo. As the corn comes from the fields, it is put through a machine which cuts the stalks, ears, and leaves in pieces and forces them up the pipe into the silo.

winter they must be fed regularly on hay and ensilage. Great care must be taken to make sure that the milk is clean and pure, for impure milk spreads disease. Therefore the farmer must spend much time keeping the cows and the barn clean.

**Other crops on the dairy farms.** Because their cows need so much care and because so much land must be used for feed crops, the dairy farmers do not raise large money crops. Yet you will find a small money crop on nearly every farm. Most of the farmers raise oats to feed their horses, and some raise enough to sell part of the crop.

In the southern part of the dairying lands some of the farmers raise wheat as a money crop. Farther north many raise rye as a money crop, for rye, like oats, grows well in places where the summers are cool and moist. Some of the dairy farmers raise barley partly as a feed crop and partly as a money crop.

**Marketing dairy products.** Although the dairy farmers raise a few money crops, they get their living principally by selling milk and cream. Many farmers send their milk and cream by express train to the great centers of population at the southern end of Lake Michigan or to those at the western end of Lake Erie every day. Many others sell much of their milk and cream to cheese factories and butter factories.

Many of the butter factories and cheese factories belong to



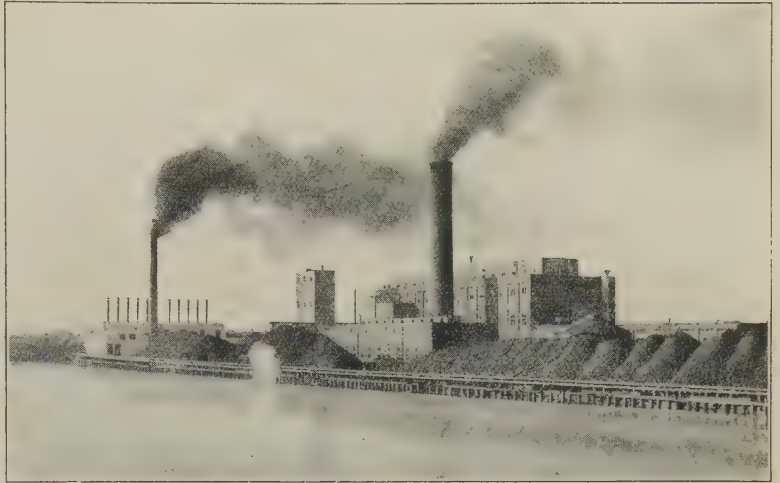
groups of farmers who have banded together to market their dairy products in this way. The business of making butter and cheese has become so important in the Lake states that Minnesota leads all states in the country in the production of butter, and Wisconsin leads in the production of cheese.

In the cheese factories whole milk (milk from which the cream has not been separated) is used to make many different kinds of cheese. In the butter factories only cream is used, and so the farmers have large quantities of skimmed milk left over. Many of them raise pigs, which they feed partly on the skimmed milk. By using the milk in this way and selling the pigs, they make extra money.

**Special crops in the dairying belt.** Instead of having dairy farms some of the farmers in the dairying belt raise crops to which the soils or the climate are especially well suited. Near the larger cities there are truck farms and market gardens. Along the eastern shore of Lake Michigan and the southern shore of Lake Erie there are belts where large quantities of apples, grapes, and other fruits are raised. Explain why these lake shores are well suited to fruit-growing.

Because of the cool, moist summer, potatoes are a special crop of great importance, and the three Lake states produce about one fourth of all the white potatoes grown in the United States. The maps on pages 120 and 128 show where the largest quantities of potatoes are raised.

On the map on page 120 find the part of Michigan where the farmers raise sugar beets. If you should travel through that part of the state in the summer, you would see hundreds of men, women, and children at work in the



Courtesy of Menominee River Sugar Company

**Figure 138.** A beet-sugar factory in Michigan. In factories like this thousands of tons of sugar beets are used each year to make refined white sugar such as we use on our tables. It is just the same as the sugar that is made from sugar cane.

sugar-beet fields. They are workers whom the beet-growers hire to weed and hoe the fields while the plants are growing.

Sugar beets are larger than the beets that we eat, and they are light-colored instead of red. As you will guess from their name, they are raised for the sugar that is made from them. After the beets are harvested, they are sent to factories like the one shown in Figure 138. In the factories the beets are sliced and then soaked in warm water to extract the sweet juice. When the water evaporates, coarse crystals of raw sugar are left. The raw sugar is then refined to make fine white sugar such as we buy in stores.

The map on page 120 shows that beans are another special crop in the lower peninsula of Michigan. The beans raised there are the kinds that are dried and sold in the grocery stores. If you have never seen any, ask your grocer to show you some dry pea beans or some kidney beans. More of these beans are raised in Michigan than in any other state.

**Forests and lumbering.** Michigan, most of Wisconsin, and most of eastern and northern Minnesota were once covered with thick for-



Figure 139. Using a tractor to haul logs out of the forest in one of the Lake states. Here, as in New England, some of the logs are floated down the streams to the sawmills and some go to the sawmills by train.

ests, and there was a time when the Lake states led all others in lumbering. But here, as in New England, so many trees have been cut down that the Lake states now buy part of their lumber supply from other parts of the country. Besides all the trees that have been cut down, large stretches of forests in these states have been destroyed by terrible fires.

In the southern part of the Lake states most of the land that was once forested is now used for farms. Farther north there are a few places where some of the original forest is left, and many where there are forests of second-growth trees. In these sections lumbering is still important. Study the maps on pages 120 and 128, and name two purposes for which the trees are cut.

As you would expect, there are many sawmills in the northern part of the Lake states, and many mills for the manufacture of wood pulp and paper. These three states taken together stand between New England and New York in the manufacture of wood pulp.

Some of the forested lands in the northern part of the Lake states have good soils and in time will be used for farming. Some have

poor soils and should be used for timber crops. In several places there are national forests where the United States Government is planting the cut-over lands with trees, and doing everything possible to prevent forest fires. The state governments are also helping by caring for the trees in state forests.

**Lumbering and the growth of towns.** In the early days of lumbering in the Lake states, many towns grew up at places on the rivers where falls or rapids provided power for sawmills. Some of these towns lost much of their population after the forests which had supplied their mills with timber were destroyed. Others became manufacturing centers, first of wood products, and later of other kinds of goods as well. On the map on page 120 find Grand Rapids, Michigan (*E3*). What kind of power does the name of the city suggest to you? Grand Rapids began its growth as a sawmill town. Today it is the second largest city in Michigan, and one of the leading furniture-manufacturing cities in the United States. See *Figure 140*.

**Detroit and its automobiles.** Figure 141 is a picture of Detroit, in Michigan. Study the picture and then find Detroit on the map on



Figure 140. Making furniture in a factory in Grand Rapids. Very likely you can find some pieces of furniture marked with the name of this city, for they are sold in all parts of the United States.





© Kalec &amp; Forster

Figure 141. Looking across the business section of Detroit toward the Detroit River and Lake St. Clair. The river and the lake form part of the boundary be-

tween our country and Canada. Detroit is a railroad gateway to Canada, and trains pass through a tunnel under the Detroit River to the Canadian side.

page 120 (*F3*). Notice its location on the waterway between Lake Erie and Lake Huron. What parts of that waterway show in Figure 141?

In 1900 Detroit was the thirteenth city in size in the United States, but today it ranks among the five largest cities. It is larger than any city of the Central States except Chicago. Do you know why Detroit has grown so fast? Any boy or girl who lives there will tell you it is because of automobiles.

The story of Detroit and its automobiles is somewhat like the story of Akron and its tires. In the first years of automobile-manufacturing the most successful of the automobile factories happened to be in Detroit. That gave the city

an early start in the industry, and other factories were soon built there. Each factory needed many workers, and in each one many men learned for the first time how to do some of the work in manufacturing automobiles.

As time went on, and more and more companies began to manufacture automobiles, or automobile bodies and parts, many of them built their factories in Detroit because they could get the trained workmen there. Thus one factory led to another, until today Detroit manufactures more automobiles, bodies, and parts than any other city in the United States.

In the meantime automobile factories were being built in other cities, and today there are several great automobile-manufacturing cen-





Aerial Photographic Service, Inc., Chicago, Illinois

**Figure 142.** An airplane view of Milwaukee, showing part of the business district and the lake front. Like Chicago, Milwaukee borders Lake Michigan, and has

an inner harbor formed by two rivers which join to flow into the lake. The part of the city shown in this picture is between one of the rivers and the lake.

ters in the country. But Detroit made the earliest start, and the other cities have never caught up with it.

Although the automobile industry is the principal reason for Detroit's rapid growth, you must not think that automobiles are its only manufactures, or manufacturing its only work. It has many other kinds of factories, which turn out a great variety of manufactured products. Its location on the waterway between Lake Huron and Lake Erie makes it a port of some importance, and it is also a busy railroad center.

Several other Michigan cities are important automobile-manufacturing centers. Among these are Flint, Lansing, and Pontiac.

**Milwaukee.** Figure 142 is a picture of Milwaukee, the largest city of Wisconsin. Find this city on the map on page 117 (*D3*).

Milwaukee's lake trade will remind you of Chicago. Freighters bring iron ore and coal to its wharves and carry away wheat and

other kinds of grain from its elevators. But Milwaukee is especially important as a center from which grain is forwarded to the East by train. Many of the freight cars which bring grain from the farm lands are run on to train ferries and carried across Lake Michigan to cities on the opposite shore. From there they run eastward, some to ports on the Atlantic coast where the grain is exported to distant lands, and some to the flour-milling cities of the East.

Among the many manufacturing plants of Milwaukee are factories for making automobile bodies and parts, knitting mills, foundries and machine shops, shoe factories, tanneries, meat-packing plants, and steel mills. Which ones use products of the Central States?

Like the other large cities of the Central Plains, Milwaukee is a distributing center for manufactured goods, some of which come from its own mills and factories, and others from distant parts of the country.



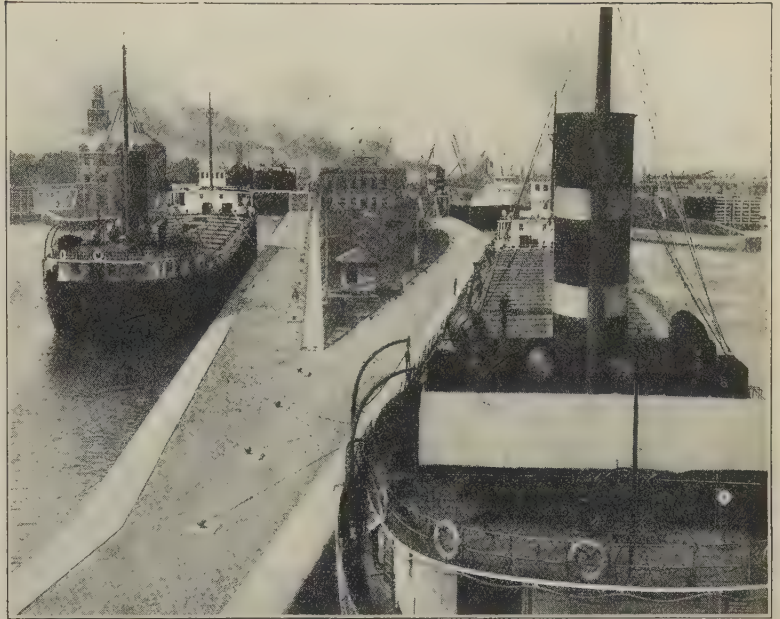
**Up the lakes to Duluth.** From the larger ports on Lake Michigan and Lake Erie passenger boats go up the lakes to Duluth, at the western end of Lake Superior. Plan a trip on one of these boats. Choose the city from which you wish to start, and use the map on page 120 to trace your route as far as the St. Marys River, which connects Lake Huron with Lake Superior. Notice that this river forms part of the boundary between the United States and Canada.

The lower part of St. Marys River has been deepened so that large boats may pass through it. At its upper end, near the place where it flows out of Lake Superior, there are rapids in the river.

Here two canals have been built, one on the American side of the river and the other on the Canadian side. They are called the Soo Canals. Find them on the map.

Lake Superior is twenty-one feet higher than Lake Huron, and so boats going up the lakes must be lifted as they pass through the Soo Canals. The lifting is done in parts of the canals known as *locks*. Each lock is a big oblong-shaped basin with concrete walls, and a gate at each end. Your boat will move slowly into a lock in which the water is at the level of Lake Huron. The gate at the upper, or Lake Superior, end of the lock is tightly closed, and as soon as your boat is in the lock the gate behind it will also be closed. Then more water will be let into the lock until the water is raised to the level of Lake Superior. The rising water will lift your boat, and when the gate at the upper end of the lock is opened, you will sail out into Lake Superior. See Figure 143.

Four locks have been built side by side in the canal on the American side of the river,



© A. E. Y.

Figure 143. Freighters waiting their turn to go through the locks of the American Soo Canal. During the season when boats can sail on the Great Lakes the locks of the "Soo" are used night and day.

so that several boats may pass up and down at the same time. Boats coming down the lakes are lowered by letting water out of the locks just as boats going up are lifted by letting water in.

On its way to Duluth your boat will stop at Houghton, in the Keweenaw Peninsula of Michigan. Find this peninsula on the map on page 120. To what natural region does it belong? What kind of mines can you visit there? This is the only important copper-mining center east of the Rocky Mountains.

**Twin ports on Lake Superior.** From Houghton you will sail to Duluth, Minnesota's port on Lake Superior. Turn to the map on page 128, and find Duluth (G2). Notice that the western end of Lake Superior forms a narrow, pointed bay there. The bay makes an excellent harbor. On the north side of it is Duluth, Minnesota, and on the south side is Superior, Wisconsin. You may think of these cities as twin ports, for they both carry on the same kind of trade.

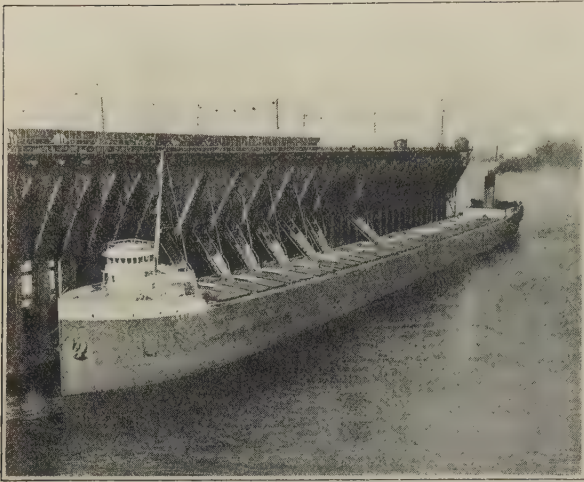


Figure 144. A lake boat loading iron ore at Superior. The cars that bring the ore from the mines are run out on the piers where they are tipped up to dump the ore into bins beneath the tracks. From the bins the ore slides down great steel chutes into the boats.

The most interesting sights in Duluth and Superior are along the water front. At the coal docks you will see freighters unloading coal which they have brought from ports on Lake Erie and Lake Michigan. From the docks freight trains carry the coal to many parts of Minnesota and the states to the west. At the ore docks you will see the freight cars which have brought iron ore from the mines in north-eastern Minnesota, and the boats which carry it down the lakes to ports which are near the supplies of coking coal. *See Figure 144.*

At still other docks you will see freighters loading wheat which comes from the wheat lands of western Minnesota and the neighboring states. In the late summer the wheat begins to come from the farm lands, and the freighters load it as fast as possible and carry it down the lakes. *See Figure 145.*

Shipping goes on until the ice on the lakes becomes too thick in the fall. During the winter the grain that has not been shipped in the fall is stored in the elevators at Duluth and Superior, and even in some of the boats tied up at the docks. As soon as the ice breaks up in the spring, shipping begins again.



Figure 145. A freighter loading wheat at a grain elevator at Duluth. From the elevator the wheat slides down long pipes into the boat. Some of the freighters carry wheat as far east as Buffalo. Most of them go to ports on Lake Erie, and some go to Chicago.

Iron ore and grain are by far the most important cargoes carried down the lakes from Duluth and Superior, but some of the freighters carry lumber. Study the map on page 128 and tell where the lumber comes from.

As you would expect, Duluth and Superior have flour mills and lumber mills, and Duluth has blast furnaces where iron ore is smelted with coal brought from ports on Lake Erie and Lake Michigan. But neither of these cities is a great manufacturing center. They owe their growth chiefly to their location at the western end of Lake Superior. This location has made them "gateway" ports through which products of the farms, forests, and mines of the neighboring regions pass on their way to the great cities farther east.

**Where iron is mined.** You cannot visit the ore docks at Duluth without wishing to see the iron mines. You can have your wish by taking a train at Duluth and riding northward into the Laurentian Upland of Minnesota, where far more iron is mined than anywhere else in the country. On the map on page 128 find the towns that have grown up around the iron mines.



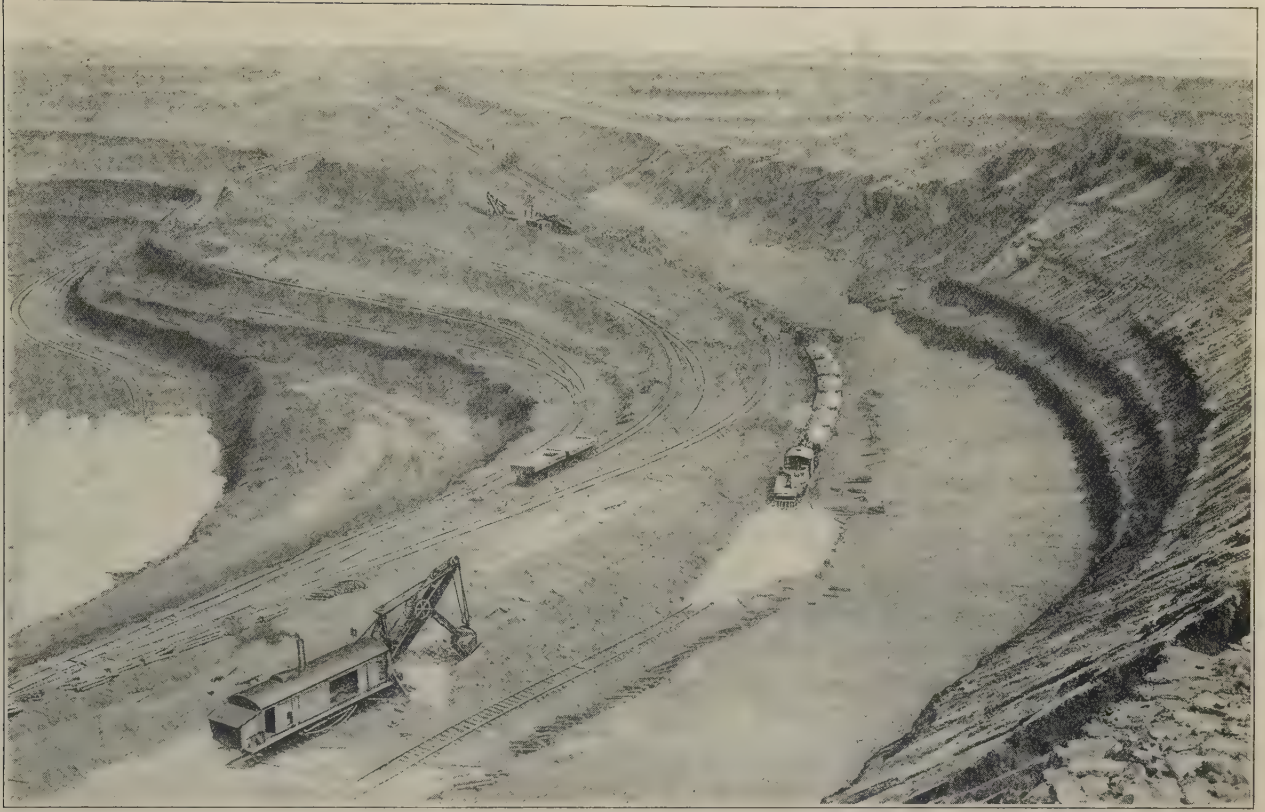


Figure 146. An "open-pit" iron mine in Minnesota. The pit is a huge hole in the ground where iron ore is scooped up by great steam shovels. Find a steam

shovel and some railroad cars loaded with iron ore in the picture. From the mine pits the cars carry the ore direct to the ore docks at Duluth and Superior.

Iron ore looks much like reddish-brown soil, but it is much heavier than soil, for it contains small particles of the metal. In the mining district north of Duluth there are places where the iron ore is so near the surface of the ground that it can be reached easily by digging away the soil that covers it. Figure 146 shows how the mining is done in these places.

Turn to the map on page 120 and find other parts of the Laurentian Upland where iron is mined. In what two states besides Minnesota are there iron mines? Find a lake port in Wisconsin, and two in the upper peninsula of Michigan, from which iron ore is shipped. So much iron is taken from the mines in the three states that share the Laurentian Upland that this region produces four fifths of all the iron ore mined in the United States, and nearly one half of all that is mined in the world.

Not all the mines in this region are of the open-pit kind. In places the iron ore is deep underground, and in order to mine it shafts and tunnels such as you saw at the coal mines in Pennsylvania must be driven into the earth. Underground mining costs more than open-pit mining, but the ore of this region is so rich that it is worth while to mine it both ways.

**The spring-wheat lands.** If you travel westward from Duluth, you will soon see where the wheat that is shipped down the lakes comes from. Crossing central Minnesota, you will come to the lands that are drained by the Red River, which forms the boundary line between Minnesota and North Dakota. There you will see miles and miles of level wheat fields. The wheat lands extend westward through North Dakota and most of South Dakota.



Figure 147. A tractor breaking new ground for a crop of wheat. After the farmers have broken the ground, they use plows and other machines to make the soil ready for planting the seeds.

Perhaps you have already guessed that the wheat grown in these lands is planted in the spring instead of the fall. Winter wheat cannot be grown safely here because the winter weather is often so cold that many of the plants die. Spring wheat grows best where the rainfall is rather light, and it ripens in about four months after it is planted. Study Figures 194 and 195 on page 200, and you will see how well western Minnesota and the two Dakotas are suited to this crop. Besides having the right kind of climate, the spring-wheat lands have rich soils.

North Dakota, which has the largest share of these lands, is one of the two leading wheat-growing states of our country. The other leading wheat state is in the winter-wheat lands. What one is it?

"Wheat work" in the spring-wheat lands is much the same as in the winter-wheat lands, except that the farmers plant the seeds in the spring and harvest the grain in the late summer. The farms are very large and all the work is done by machinery.

When these lands were first settled, most of the farmers raised nothing but wheat. After a time they found that raising wheat year after year was making the soil poorer. They

had other troubles too, for in some years the weather was bad for wheat and the weeds grew rapidly, or grasshoppers and other insects damaged or destroyed the crops. The wiser farmers began to grow other crops besides wheat, and today the spring-wheat lands are fast becoming mixed-farming lands. Wheat, however, is the principal money crop.

Figures 104, 110, and 111 show that three other kinds of grain are important crops in the spring-wheat lands. What are they? Flax is still another crop in these

lands. The farmers raise it for the seeds, which are sold to mills where they are crushed to squeeze out the oil. Oil from flaxseed is called linseed oil, and is used principally in making paints and varnishes.

Many of the farmers use part of their land for pasture, and raise beef cattle. In the autumn and winter they send some of the cattle eastward to be slaughtered or to be fattened for market on the corn-belt farms. In the moister, eastern part of the wheat lands some of the farmers have herds of dairy cows, and sell the milk to butter factories. By raising several different crops and keeping live stock, the farmers have other things to sell besides wheat. This is a great help, especially in years when the wheat crop is poor.

As you travel through the spring-wheat lands you will see many small towns, but no large cities. In every city or town you will find at least one grain elevator beside the railroad tracks. The farmers bring their grain to these elevators to be sent eastward by train.

**The Twin Cities of Minnesota.** You already know that much of the wheat from the spring-wheat lands goes to Duluth to be shipped down the Great Lakes. Large quantities also go to Minneapolis, the nearest large city to the





Courtesy of Bylesby Engineering and Management Corporation

**Figure 148.** A view of Minneapolis showing the Falls of St. Anthony and the flour mills on the west bank of the river. The falls provide hydroelectric power for

some of the mills, but not nearly enough for all, and many of them use coal to make steam power. Why are there railroad freight yards close to the flour mills?

wheat lands. Find Minneapolis on the map on page 128 (G3). On what river is it located? What city is just east of Minneapolis? What does the map tell you about that city?

Minneapolis and St. Paul are called "Twin Cities." They have grown completely together, and now form one large center of population. The map on page 125 shows that both are railroad centers. Trace some of the railroads that run westward from the Twin Cities through the spring-wheat lands.

Minneapolis began its growth as a sawmill town at the Falls of St. Anthony in the Mississippi River. Today it is one of the largest manufacturing centers in the northern part of the Central States. St. Paul, which is just below the falls in the river, was the head of steamboat navigation on the Mississippi in the days before railroads, and began its growth as a river port. Today it is smaller than Minneapolis, but it is the capital of Minnesota.

The Falls of St. Anthony gave Minneapolis an early start in manufacturing. Its first

manufacturing plants were lumber mills, which were run by water power from the falls. When the plains to the west were settled and turned into wheat lands, flour mills were built in Minneapolis. Today Minneapolis grinds more wheat and other grain into flour and meal than any other city in the United States, and flour-milling is by far its most important manufacturing industry. See Figure 148.

St. Paul carries on much less manufacturing than Minneapolis, but it is an important business center. Both cities have foundries and machine shops, railroad repair shops, lumber mills, furniture factories, and butter factories. Why are the Twin Cities natural places for these kinds of manufacturing?

**Something to do.** Wherever you live, some of your food is sure to come from the Central States. Look on your pantry shelves and see how many food products you can find that were prepared in these states. Make a list of them and bring it to school. It will be interesting to see who can get the longest list.

**A selection test.** Select the word or phrase which makes each statement below correct :

1. Corn is raised in the corn belt chiefly  
for export.                      to feed live stock.                      for food.

2. The corn belt is also the  
fruit belt.                      dairying belt.                      hog belt.

3. The great winter-wheat state is  
Kansas.                      Minnesota.                      North Dakota.

4. The great spring-wheat state is  
Illinois.                      North Dakota.                      Missouri.

5. Wheat is used most largely for  
breakfast foods.                      flour.                      feed for live stock.

6. The state that leads in butter-making is  
Kentucky.                      Nebraska.                      Minnesota.

7. The state that leads in cheese-making is  
Wisconsin.                      Michigan.                      Indiana.

8. A special crop of importance in the hay and  
dairying belt is  
alfalfa.                      potatoes.                      cotton.

9. A very important crop on the limestone  
plains of Kentucky is  
rice.                      sugar beets.                      tobacco.

**Giving reasons.** Complete each of the following sentences, giving the correct reason for the fact stated :

1. The leading meat-packing cities of the United States are in the Central States because .....

2. Many of the leading flour-milling cities are in the Central States because .....

3. Much of the farm machinery manufactured in the United States is made in the Central States because .....

4. Iron and steel are manufactured in cities on the southern shores of Lake Erie and Lake Michigan because .....

**Do you know these cities?** Name one or more cities in the Central States which are well known for the manufacture of each of the following products :

|       |              |                |
|-------|--------------|----------------|
| flour | furniture    | farm machinery |
| shoes | automobiles  | cash registers |
| meats | rubber goods | iron and steel |

**A list to make.** Write down the names of the cities described below. When you have finished, you will have a list of the ten largest cities of the Central States.

1. The city near the southern end of Lake Michigan.

2. The great city on the Detroit River.

3. The largest city on Lake Erie.

4. The city on the Mississippi River near the mouth of the Missouri.

5. The second largest city on Lake Michigan.

6. The city at the Falls of St. Anthony on the Mississippi River.

7. The city on the big bend of the Ohio River.

8. The city at the junction of the Kansas and Missouri rivers.

9. The largest city of Indiana.

10. The city at the Falls of the Ohio.

**A mining test.** Name the following mineral products of the Central States :

1. Two fuels found in the Appalachian Plateau.

2. Two metals mined in the Ozark Plateau.

3. Two metals mined in the Laurentian Upland.

4. A fuel mined in southern Illinois.

5. Two fuels found in eastern Kansas.

**A check.** Two items that you should surely have in your list of reasons why so many people can make a living in the Central States are farming and manufacturing, for they provide work for the largest numbers of people there. Prove that you understand why by giving the right words to fill the blanks in the following sentences :

1. The Central States are a great farming section because

(a) much of the land is .....

(b) most of the soils are .....

(c) there is plenty of .....

2. Manufacturing is carried on in many parts of the Central States because

(a) they produce many .....

(b) they have much ..... and ..... for power ;

(c) the many cities, towns, and farms provide ..... for ..... goods.





Figure 149. A view of the San Bernardino Mountains in southern California. What differences in surface do you see in the picture? On the plain are groves of

orange trees. What do they tell you about the climate there? What difference between the mountains and the bordering plain does the snow suggest to you?

## VI. THE WESTERN STATES

**Foreword.** You are now ready to visit the part of the United States which we call the West. This part includes the eleven Western States. Do you know what states they are?

Figure 193 on page 196 shows that there are vast stretches of land in the West with less than two people to each square mile. Can you think of any reason for the few people there? Figure 193 also shows that there are some places in the West where the population is as dense as it is in many parts of the East. Why do you suppose the people of the West are so unevenly distributed? What do you think those in the more densely populated parts do for a living?

Be on the watch for answers to these questions as you study about the Western States. Begin your study by doing the map work suggested in the next paragraphs.

**Map work.** Complete your map of the United States by tracing the boundaries of the Western States from the outline map on page 315. Print the name of each state or its abbreviation on your map.

When you have finished, turn to page 165 and work out the map studies in Group I.

### 1. A LAND OF GREAT DIFFERENCES

People sometimes call the West "a land of great differences." Do you know why? As you read about the "great differences," try to think what they have to do with the life and work of the people.

**Differences in surface.** Figure 149 shows some differences in surface such as you will see in many parts of the West. After you have studied that picture, study the pictures on pages 3, 4, 14, and 15 again.



Figure 150. The great wind belts of the earth. What winds blow from southwest to northeast in the Northern Hemisphere? This is the belt of winds in which the United States is located.

You have learned from the maps and the pictures that the highest mountains in the United States are the Rocky Mountains, the Cascade Range, and the Sierra Nevada of the West. What kind of mountains are they? How do they differ from the mountains of the East?

You have also learned that the West has vast stretches of plateaus and several regions of plains. One of the "great differences," then, is in the surface of the land.

**Differences in rainfall.** Figure 194 on page 200 shows that the West has great differences in rainfall also. Here are the rainiest lands and the driest lands of the country. Compare the rainfall map with the map on pages 10–11, and you will discover that the rainiest lands are the mountains of the Northwest, — the Cascade Range, the northern Sierra Nevada, and the northern Coast Ranges. The thickest forests of the country are on the slopes of these rain-drenched mountains.

On the rainfall map find the parts of the West which have less than ten inches of rain

each year. These dry lands are mostly in the Western plateaus. Most parts of the plateaus have too little rain for trees to grow, and thousands of square miles are so dry that they have scarcely any grass. The driest parts of all are deserts.

**Reasons for differences in rainfall.** As you study the Western States, you will find that the way the people live and work depends partly on the surface of the land and partly on the climate, especially the rainfall. It is worth while, then, to find out why the West has such great differences in rainfall.

First of all, study Figure 150 and its legend. The United States is north of the tropic of Cancer and is in the belt of *westerly winds* of the Northern Hemisphere. These winds blow from the Pacific Ocean eastward across the central and northern parts of North America.

Wind, as you know, is air moving fast enough to be felt. As the westerly winds blow across the Pacific Ocean toward North America, they gather up much moisture from the water. The moisture is in such tiny particles that it cannot be seen, and we call it *water vapor*. Warm air can hold much more water vapor than cold air can.

When the westerly winds reach the Pacific coast of North America, they are moist because they are carrying much water vapor. In order to cross the Coast Ranges, the moist winds must rise. As they rise, the air is cooled and can no longer hold all the water vapor that it is carrying. Part of the water vapor changes into raindrops, and the rain falls on the western slopes of the mountains.

East of the Coast Ranges in the United States the winds have to rise still higher to cross the Cascade Range and the Sierra Nevada. As they rise, the air becomes still cooler, and therefore much rain falls on these high mountain ranges. In winter the water vapor changes into snowflakes instead of rain-



drops, and there are heavy snowstorms in the mountains. See *Figure 151*.

You have learned that the great plateaus east of the Cascade Range and the Sierra Nevada are very dry. That is because the winds lose most of their moisture on the western slopes of the mountains. As they move down the eastern slopes they become warmer, and as they blow across the plateaus they are apt to gather up moisture from the earth instead of causing rainfall.

Passing eastward over the plateaus, the winds rise once more to cross the Rocky Mountains. Keeping in mind what you have just learned, explain why the higher parts of the Rocky Mountains have a considerable amount of rain, and why the Great Plains east of the mountains are dry.

**Differences in growing season.** Since the Western States extend all the way from Canada on the north to Mexico on the south, you will expect to find great differences in the growing season. On *Figure 195* on page 200 find parts of the West where the growing season is as long as in the warmest parts of the South. Find places where it is shorter than anywhere else in the country.

**A sentence to complete.** Complete the following sentence by giving the right words to fill the blank spaces:

The West has greater differences in (1) \_\_\_\_\_ of the land, (2) amount of \_\_\_\_\_ that falls each year, and (3) length of \_\_\_\_\_ than any other part of the United States.

**Some thought questions.** 1. Do you think the West is as well suited to farming as the Central States or the South? Give two reasons for your answer.

2. What kind of work do you think the people do in the drier parts of the plains? in the moister parts?

3. Do you think lumbering is important in any part of the West? If so, where?



**Figure 151.** The entrance to a railroad snowshed in the Sierra Nevada. So much snow falls in these mountains in winter that long stretches of the railroad tracks have to be protected in this way.

## 2. THE WESTERN PART OF THE GREAT PLAINS

Turn to the map on pages 10–11 and name the states which share the Great Plains. What four of them are Central States? What two are Southern States? What four are Western States?

You will remember that the Great Plains are grasslands, with too little rain for many trees. Years ago people called them "buffalo lands" because huge herds of buffaloes roamed over them, feeding on the wild grasses. Many people crossed the buffalo lands on their way to the West, but for a long time few dared to settle there. They were afraid to try to make a living where there was so little rain that crops were likely to fail.

After the building of the first railroad from Omaha to the Pacific coast, the buffaloes were killed off, and cattlemen and sheepmen began to raise cattle and sheep on the lands where the buffaloes had grazed. Little by little, farmers too moved into the Great Plains, and today the moister eastern section is more of a farming region than a grazing region. But in the drier western section grazing is still the most important kind of work. This section is mostly in the Western States, but it includes parts of the other states which you have named.



U. S. Department of Agriculture

Figure 152. Cattle on a ranch in the plains of New Mexico. The stream provides water for the cattle to drink. In many places water for the live stock is pumped from wells by windmills.

**Cattle ranches.** Figure 152 shows the kind of sights you will see on the *ranches*, or live-stock farms, of the Great Plains. No doubt you will be surprised at the size of the ranches. You may travel for miles without seeing a house or a tree, or any land used for crops. The pastures stretch away as far as you can see, separated from one another by wire fences which keep the cattle from straying away from their owner's land. You will find that the ranch houses are in the valley bottoms, where they are somewhat sheltered from the strong winds that sweep across the plains.

**The ranchman and his work.** You will find that the ranchman uses most of his land for pasture. In the southern part of the plains the weather is warm enough for the cattle to graze out of doors the year round, but in the northern part, in the winter, there are often bad snowstorms called blizzards. During the blizzards and as long as deep snow covers the ground, the ranchman must keep his cattle in barns or sheds much of the time, feeding them on crops raised during the summer.

Such crops as alfalfa and Kafir corn, which are raised to feed live stock, are called *forage*

*crops*, and most of the ranchmen use a small part of their land for crops of this kind. Even in the south, where the cattle can graze in the pastures all winter, forage crops are raised for extra feed.

Besides raising forage crops, some of the ranchmen raise wheat. If there happens to be enough rain for a good wheat crop, the ranchman makes extra money by selling his wheat. If the weather is too dry and the wheat is poor, he mows it like hay and feeds it to his cattle.

In the autumn or early winter the ranchman picks out the cattle that he wishes to sell, and drives them to the nearest railroad station. From there they are sent eastward to be fattened for market. You already know where the cattle are fattened, and what becomes of them afterwards. Tell all you can about the cattle after they leave the ranches.

There are two reasons why the ranches are so large. One is that a ranchman must keep a large number of cattle if he is to make a good living. The other is that in the western Great Plains each animal needs from 15 to 25 acres of pasture land in order to find enough grass to eat. This means that if a ranchman keeps 100 cattle, he must have from 2 to 4 square miles of land. Very few of the ranches cover less than 2 square miles, and the largest ones cover 100 square miles or more.

**Raising sheep.** In the driest parts of the Great Plains there are more sheep than cattle, because sheep can feed on shorter and poorer grass than cattle can, and they do not need so much water. In the northern part of the plains some of the sheep pastures have no fences around them, and there the sheep graze in large flocks, tended by sheep-herders and their dogs.



In the summer some of the sheep are driven up into the pastures in the Rocky Mountains to graze. When cold weather comes, they are driven down to the plains again. During the winter they graze out of doors part of the time, and the rest of the time they are fed on alfalfa and other forage crops. See Figure 153.

Farther south, in the plains of Texas and New Mexico, most of the sheep pastures are fenced. When this is done, the ranchmen do not have to hire men to tend the animals. The sheep graze out of doors the year round, and it is not necessary to raise forage crops to feed them in winter. Turn to the map on page 96, and find a part of the grazing lands in Texas where sheep-raising is very important. Large numbers of goats are also raised in this part of Texas.

The sheep in the Great Plains are raised partly for wool and partly for meat. Some of the sheep that are raised for meat are sent eastward in the autumn or winter to be fattened on the corn-belt farms. The sheep that are kept for wool are sheared, or clipped, in the spring when the weather is warmer and they no longer need their thick winter coats.

**Irrigated lands.** Turn to Figure 194 on page 200 and find the 20-inch rainfall line. From that line westward to the Rocky Mountains the yearly rainfall grows less and less. Along the western margin of the Central States about 15 inches of rain falls each year, and still farther west the rainfall is less than that.

Fifteen inches of rainfall is too little for most crops except wheat, alfalfa, and sorghums. That is why so much of the land in the western Great Plains is used for grazing instead of for farming. Farmers who wish to



Courtesy of University of Nebraska and the Burlington Route

Figure 153. Sheep on the Great Plains. They have been brought in from the pastures where they were grazing on grass, and are now being fed on alfalfa and other forage crops.

raise crops needing more moisture must *irrigate* their fields with water from wells or rivers.

Turn to the map on pages 10–11, and notice how many rivers rise in the Rocky Mountains and flow eastward across the interior plains. The rainfall and the snowfall are fairly heavy in the mountains, and so the larger streams that flow down the mountain slopes and across the plains never dry up. These streams provide water for irrigation.

When a large stretch of land is to be irrigated from a river, a dam is first built across the stream. This holds back the water, storing it for use when it is needed. If the dam is high, it may make a lake behind it. Such a lake is called a *reservoir*, and it serves as a storage basin for the water. Canals are dug to carry the water from the reservoir or the stream itself to the farm lands, and smaller ditches carry the water from the canals to the separate fields. Water gates are built in the ditches, and whenever the farmer wishes to water a crop, he opens the gate and lets little streams of water run between the rows of plants. When he has let in all the water he needs at that time, he shuts the gate again. See Figure 154.



Courtesy of University of Nebraska and the Burlington Route

**Figure 154.** Irrigating corn in the western part of the Great Plains. The climate is too dry for corn, but excellent corn crops are raised by irrigation.

It costs so much to build dams and dig canals for irrigation that many farmers cannot afford to do it by themselves. In some places the work is paid for by the people of the township or the county in which the irrigated lands are located, and in others the states help to pay for it. Turn to the maps on pages 164 and 172 and find the *national irrigation projects* in the Great Plains. In the lands covered by these projects the United States Government has built the irrigation works. On the map on page 172 find the South Platte River and the Arkansas River in Colorado (M1-2). There are many irrigated farms along these rivers. Name one of the leading crops there.

**Farming on the irrigated lands.** If you visit the irrigated lands, you will soon see that they are mixed-farming lands. You will find herds of dairy cows on the farms, and you will see crops of wheat and other grains growing in the fields. You will also see acres and acres of alfalfa, and in some places sugar beets. See Figure 155.

On most of the irrigated lands alfalfa is the most important crop. It grows so fast that the farmers usually cut two or three crops each season. Since there is little rain, the



U. S. Bureau of Reclamation

**Figure 155.** A field of sugar beets on an irrigated farm in the North Platte irrigation project. What two states share this national irrigation project?

alfalfa dries quickly as it lies on the ground. Some of it is pressed in bales, and sold as a money crop. The rest is used to feed live stock on the farms.

Some of the farmers on the irrigated lands in the Great Plains make a special business of fattening beef cattle, which they buy from stock farmers farther west. For feed crops they raise principally corn and alfalfa. Each year many carloads of fat beef cattle leave the irrigated lands for the slaughtering and meat-packing plants in cities farther east.

**Dry farming.** In some parts of the Great Plains the farmers raise wheat and other grains by *dry farming*. This means using the land in such a way as to save as much moisture as possible for the crops. One way of dry farming is to plow a field one year and not plant the crop until the second year. From time to time, while the field is lying unplanted, the farmer goes over it with a machine which keeps the soil loose. This lets nearly all the rain sink into the ground and keeps the moisture from evaporating, or passing back into the air, as fast as it would on the surface. Thus much of the moisture from each rainstorm is stored in the soil.



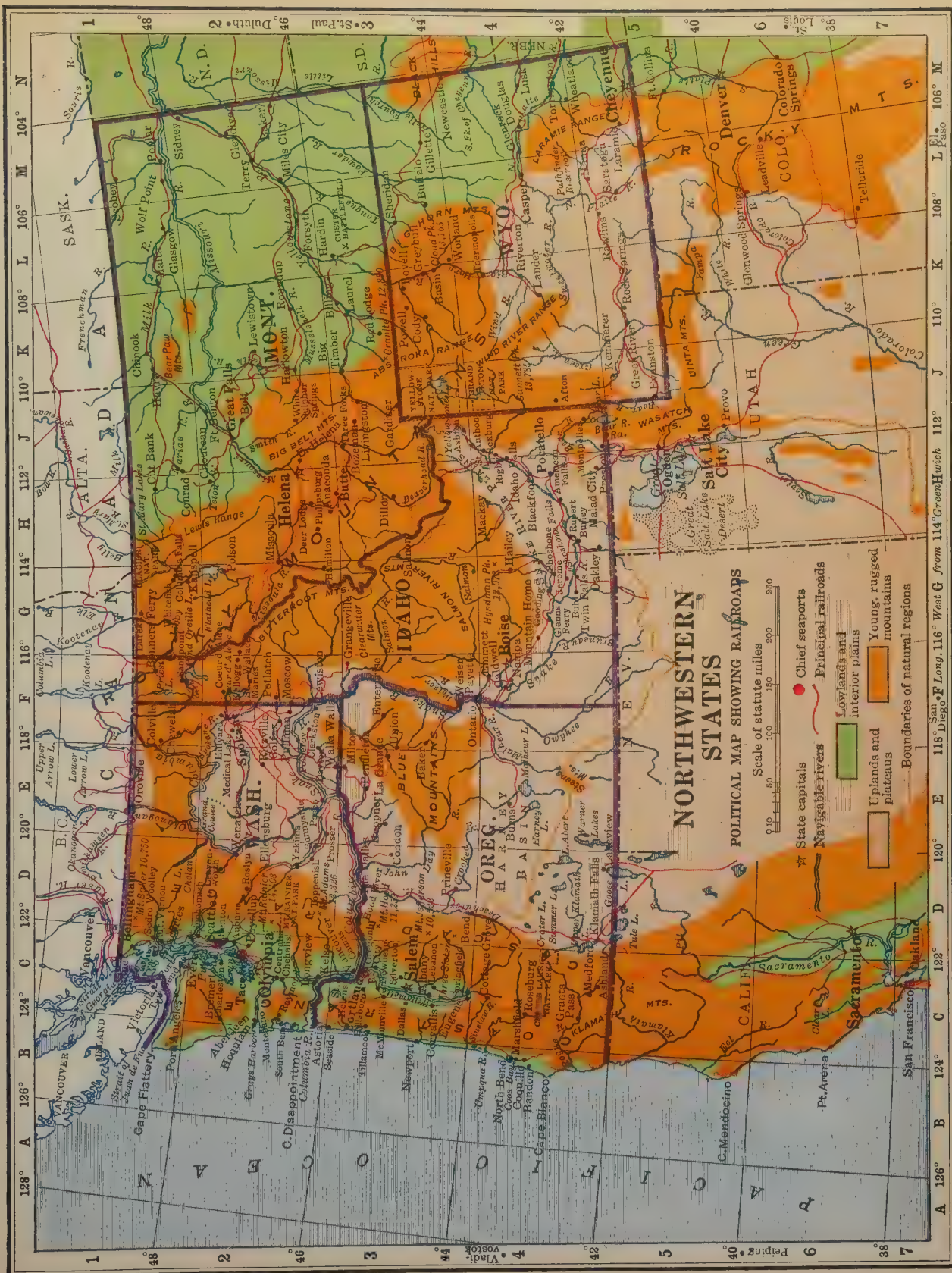






Figure 156. A picture taken at an oil refinery at Casper, Wyoming. Find some "stills," some storage tanks, and some tank cars in the picture, and tell all you can about the work that is done here.

When the field is planted in the spring of the second year, there is a supply of stored-up moisture in the soil, ready for the plants to use. This and the rain that falls while the plants are growing often provide enough moisture for a good crop of grain. Thus one year's crop makes use of two years' rain.

**Minerals in the Great Plains.** Turn to the maps on pages 164 and 172, and name the mineral products of the Great Plains. The most important oil field is in Wyoming, near the place called Teapot Dome. Much of the petroleum produced there is sent through pipe lines to Casper, where there are large oil refineries. Oil is also refined at Great Falls, the largest city of the plains of Montana. Find Casper and Great Falls on the map (*L4* and *J2*), and study Figure 156.

Most of the coal that is mined in the Great Plains is bituminous, or soft, coal which provides valuable fuel for manufacturing, for railroads, and for home use. South of Pueblo, Colorado, is a coal field where good coking coal is mined. If you remember how coke is used, you will not be surprised to learn that there is a large iron-and-steel plant at Pueblo. Study the map on page 164, and name a state

from which you think some of the iron ore for this plant may come.

**The Black Hills.** Rising above the plains in South Dakota and Wyoming are the mountains called the Black Hills. Find them on the map on page 164. Much gold is mined in the part of the Black Hills in South Dakota.

The Black Hills get their name from the dark forests of evergreen trees which cover them. What does that tell you about their rainfall? Why do the Black Hills receive more rain than the surrounding plains?

**Thinly settled lands.** Of all the parts of the United States that you have visited so far, the Great Plains are the most thinly settled. The only large center of population is around Denver, in Colorado. This city is on the margin of the Rocky Mountains, and you will understand its growth better after you have studied that region. The other cities and towns are much smaller. Some of them are busy trading centers, but only a few carry on manufacturing. Remembering what you have learned about the need for markets for manufactured goods, explain why there is so little manufacturing in the Great Plains.

**Giving endings.** Give the right ending for each of the following sentences:

1. People once called the Great Plains "buffalo lands" because .....
2. In the early days people were afraid to settle in the Great Plains because .....
3. The western part of the Great Plains is better for grazing than for farming because .....
4. Ranches in the Great Plains are large because .....
5. Many cattle and sheep go from the grazing lands to the corn belt because .....
6. Northern ranchmen raise more forage crops than southern ranchmen do because .....
7. Many farms in the Great Plains are irrigated because .....
8. Fewer people live in grazing lands than in farming lands because .....





Courtesy of Denver Tourist Bureau

Figure 157. A view of the Rocky Mountains from the state capitol at Denver. Notice that the mountains seem to rise like a great wall on the western margin

of the plains, and that there is snow on the higher peaks. Find Denver on the map (p. 172, L 2). What is the range of mountains shown in this picture called?

### 3. THE ROCKY MOUNTAINS

Figure 157 shows how the Rocky Mountains look from the Great Plains. These high, rugged mountains have forests on their lower slopes, but their upper slopes are too cool for trees to grow. The upper limit of the forests is called the *tree line* or the *timber line*. For some distance above the tree line the mountain slopes are grassy. Still higher the slopes and peaks are bare and rocky, and in places there are glaciers and snow fields which never melt away.

Turn to the map on pages 10–11 and name the states which share the Rocky Mountains. Then refresh your memory of the Rockies by studying the pictures on pages 3, 4, and 5 again.

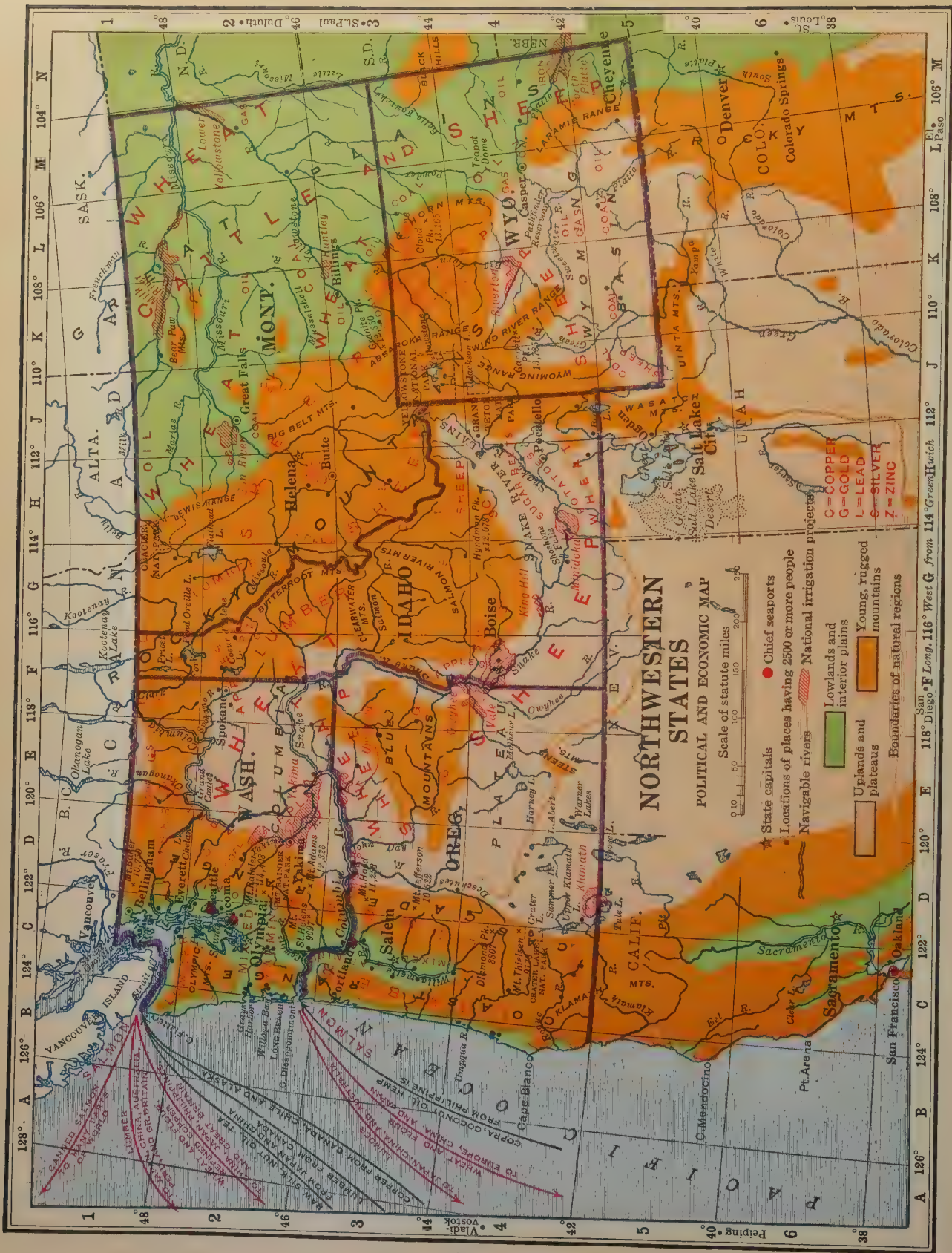
Do you think the Rocky Mountains are a great farming region? Give a reason for your answer. In what other ways do you think the people may get their living? Check your answers to these questions as you read the next few pages.

**How the mountains were settled.** Years ago, when the Great Plains were still buffalo lands, gold was discovered in the Rocky Mountains. As soon as the news spread to the settled parts of the country, thousands of men rushed to the Rockies, hoping to make their fortunes by mining gold.

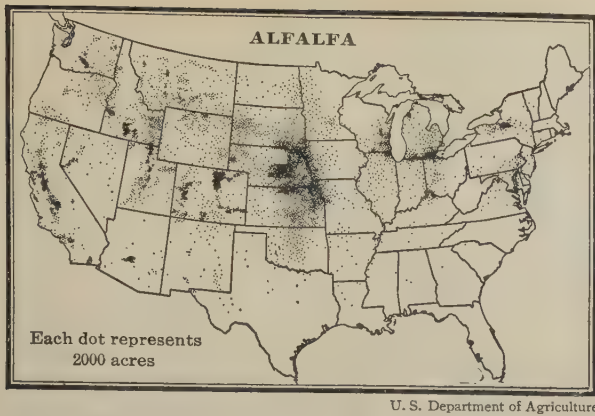
The first towns were rough mining camps, and those that were near the richest mines grew very fast. At first all the food for the miners had to be brought hundreds of miles from the plains farther east. Then some of the unsuccessful gold-hunters began farming in the valleys, raising vegetables and fruit to sell to the miners. As the mining towns grew, more and more food was needed, and this led to more farming. Thus mining and farming grew side by side.

*Turn over to page 166.*

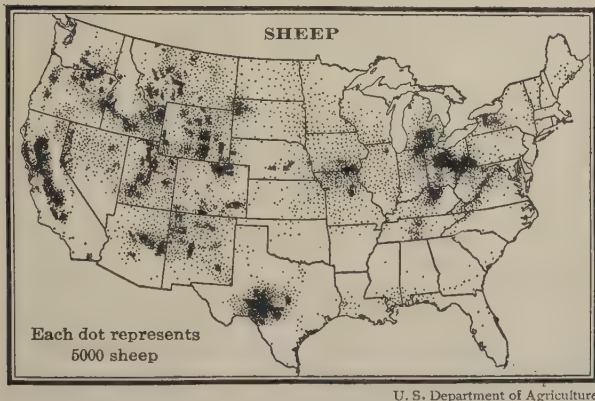








**Figure 158.** A map showing where alfalfa is grown in the United States. Much alfalfa is raised on the irrigated lands in the Western States.



**Figure 159.** A map showing the distribution of sheep in the United States. More than half the sheep are raised in the regions west of the Central Plains.

### MAP STUDIES

**Foreword.** Since the Western States extend all the way from Canada on the north to Mexico on the south, we divide them into two sections. The map opposite this page and the one on page 161 show the Northwestern States, and the maps on pages 169 and 172 show the Southwestern States.

#### Group I

1. Of the five Northwestern States which one has a large share of the Great Plains? 2. Which one has a smaller share of the Great Plains?
3. What three states share the northern section of the Rocky Mountains? 4. In what state is the Wyoming Basin? 5. What two states share the Cascade Range, the Coast Range, and the

lowland between the two ranges? 6. What three states share the Columbia Plateau?

7. What part of Montana looks as if its surface were well suited to farming? 8. Why is the rest of the state not so well suited to farming? 9. What region of Washington and Oregon looks as if it would be a good place for farming?
10. Of the two states which border the ocean, which one has a better coast line for shipping? Why?
11. As a whole, are the Northwestern States made up mostly of plains or of mountains and plateaus?

Now turn to page 173, and work out the map studies in Group I there.

#### Group II

1. What mountains border the Columbia Plateau on the west? on the east? 2. What mountains rise in the midst of it? 3. Find the river for which the plateau is named. 4. Into what ocean does it flow? 5. Notice that the longest tributary to the Columbia River is the Snake River. 6. Trace the Snake River upstream from the place where it joins the Columbia to its source. 7. In what mountains does it rise? 8. What use is made of the waters of the Columbia River and its tributaries? 9. What crop is most important in the northern part of the Columbia Plateau? 10. What kind of work besides farming is carried on in the plateau?

#### Group III

1. What great river has cut its way through the Cascade Range and flows into the Pacific Ocean? 2. What river from the south joins the Columbia River west of the Cascade Range? 3. What seaport is located where these two rivers join? 4. What long, winding arm of the sea extends far into the state of Washington? 5. What seaports are on Puget Sound?

6. Find some of the high mountain peaks in the Cascade Range. 7. Which one of them is in a national park? 8. What other national park is in the Cascade Range? 9. What kind of work is important in the Cascade Range? 10. What kind of work is important in the Willamette Valley and Puget Sound Lowland?

Now turn to page 173 and work out the map studies in Group IV there.

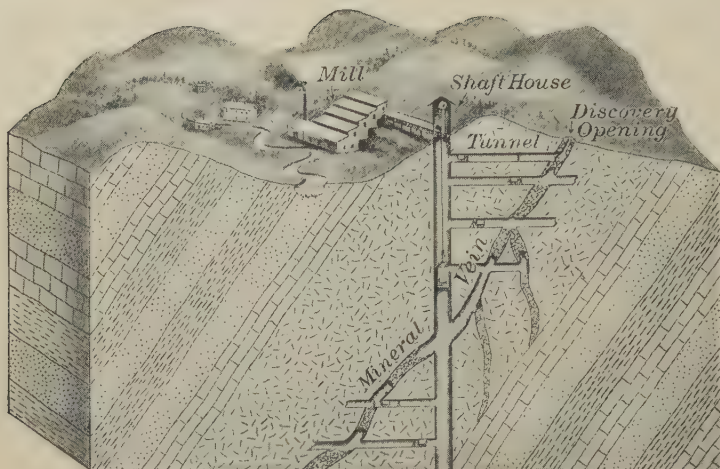


Figure 160. A diagram showing how metal ores are mined deep within the earth. The deep hole is the mine shaft. From the shaft side tunnels lead to the mineral vein, where the miners dig and blast out the ore. Cars carry the ore along the tunnels to the shaft, and are lifted to the surface.

**Ores and metals.** Turn to the maps on pages 164 and 172, and name five kinds of metals that are mined in the Rocky Mountains today. You already know that ores are rocks from which metals are obtained. The metals are usually in fine particles, and the rest of the ore is worthless rock. Most of the ores mined in the Rocky Mountains contain more than one kind of metal, and some contain several kinds. They are found in *veins*, or ore-filled cracks, deep within the earth. Figure 160 shows how metal ores are mined.

We often speak of gold and silver as the "precious metals," yet iron, copper, lead, and zinc are more important because they have more uses. Tell at least one way in which each of the more important metals is used.

**Mining centers.** In studying the maps, you must have noticed that there are several centers in the Rocky Mountains where different kinds of metals are mined. If you wish to see the greatest center of them all, you will go to Butte, the largest city in Montana. Find Butte on the map on page 164 (H2), and then study Figure 161.

From the mines the ores are sent to smelters, or smelting plants, where the metals are separated from the worthless rock. Some of the ores are smelted at Butte itself, and large quantities are sent to smelters in Anaconda, East Helena, and Great Falls. Find these cities on the map on page 161 (H-J2). Which one is close to the capital of Montana?

Another busy mining center is in northern Idaho, in what is called the Cœur d'Alene district. This is one of the most important lead-mining centers of the country. Find it on the map on page 164 (F-G2), and study Figure 162.

Farther south, in the Rocky Mountains of Colorado, are other important mining districts. Find them on the map on page 172 and name the metals mined there. The Cripple Creek district, in the mountains southwest of Colorado Springs, is one of the greatest gold-mining centers in the United States.



Figure 161. The great hill at Butte, where more copper is mined than anywhere else in the United States. Many shafts have been sunk into the rich veins of ore in this hill and hundreds of men work in the mines.



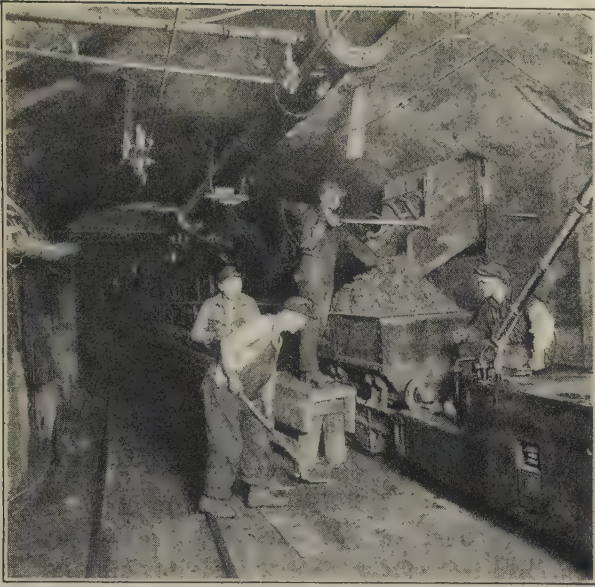


Figure 162. Loading cars with ore in a lead mine in the Cœur d'Alene district. The cars are drawn along the tunnel by an electric engine. What other metals are obtained from the ores mined in this district?

Besides the larger mining centers which you have located on the maps there are many smaller ones scattered through the Rocky Mountains. It is fortunate that there are rich ores in these rugged mountains, for the mines and the smelters provide work for thousands of people in places where it would be hard to get a living in any other way.

**Valley farms.** The valleys in the Rocky Mountains are almost the only places that are level enough for farms. Some of the valleys are large, but many are small. Some are so high that they are too cool for most crops, and others are so shut in by mountain ranges that they are too dry. Fortunately, most of the valleys can be irrigated by water from the mountain streams.

Although the Rocky Mountain region as a whole is not well suited to farming, many farmers

make a good living in the irrigated valleys. Most of the irrigated lands are mixed-farming lands. The more important money crops are wheat, potatoes, and fruit, especially apples. The valleys are so well suited to orchards that some of them have become famous for their fruit. Much of the crop land is used for alfalfa and other forage crops to feed and fatten live stock.

**Grazing in the mountains.** In the summer thousands of sheep graze on the high pastures above the tree line. Most of them come from ranches on the lower lands bordering the mountains. They reach the mountain pastures soon after the snow melts in the spring, and they stay until September or October. Then, when the nights are getting cold, and snow is likely to fall, they are driven down to the lower lands again. See Figure 163.

Below the tree line, in the open, grassy places among the forests, cattle as well as sheep are pastured during the summer. Like the sheep, the cattle come from ranches on the lower lands. Large tracts of these pastures are in the national forests. A ranchman



Figure 163. Sheep on a high pasture in the Rocky Mountains. Each flock usually numbers from 500 to 1000 sheep, and is tended by a sheep-herder. With the help of his dog, he keeps the sheep from straying and from being killed by bears, wolves, mountain lions, and other wild animals. When the sheep have eaten all the grass in one place, the herder drives them to a fresh pasture.



Photograph by W. J. Lubken, courtesy of U.S. Forest Service

**Figure 164.** Forest rangers on "fire patrol" in the Rockies. From high spots like this they watch for smoke that may mean that a forest fire has started.

who wishes to use the grazing lands in the national forests must get a permit from the government, and pay a small fee for each animal that he pastures there. A certain stretch of grazing land is assigned to him, and he must see that his live stock do not wander on to the land assigned to somebody else. By allowing grazing at small cost in the national forests the government helps the ranchmen and makes the best possible use of much of this rough mountain region.

**Lumbering in the mountains.** The trees in the Rocky Mountains are mostly evergreens, and the thickest forests are in the north, where the rainfall is greatest. For this reason more lumbering is carried on in Montana and Idaho than in the mountain states farther south.

In many places where the trees are cut on steep mountain sides, the logs slide down long wooden chutes to log ponds in the valleys below. They come down at great speed, and as they land in the ponds the water splashes high into the air. Beside the ponds are sawmills where the logs are sawed into boards.

Most of the lumber from the Rocky Mountain region is used by the people who live

there, or by those who live in the treeless plains and plateaus that border the mountains.

**How our government takes care of the national forests.** If you camp or climb in the national forests, you are sure to meet some of the men who take care of the forests for the government. They are called *forest rangers*, and they are trained especially for the work that they do. You may see them riding horseback over the lonely mountain trails, or you may find them on the rocky peaks watching for signs of forest fires. See Figure 164.

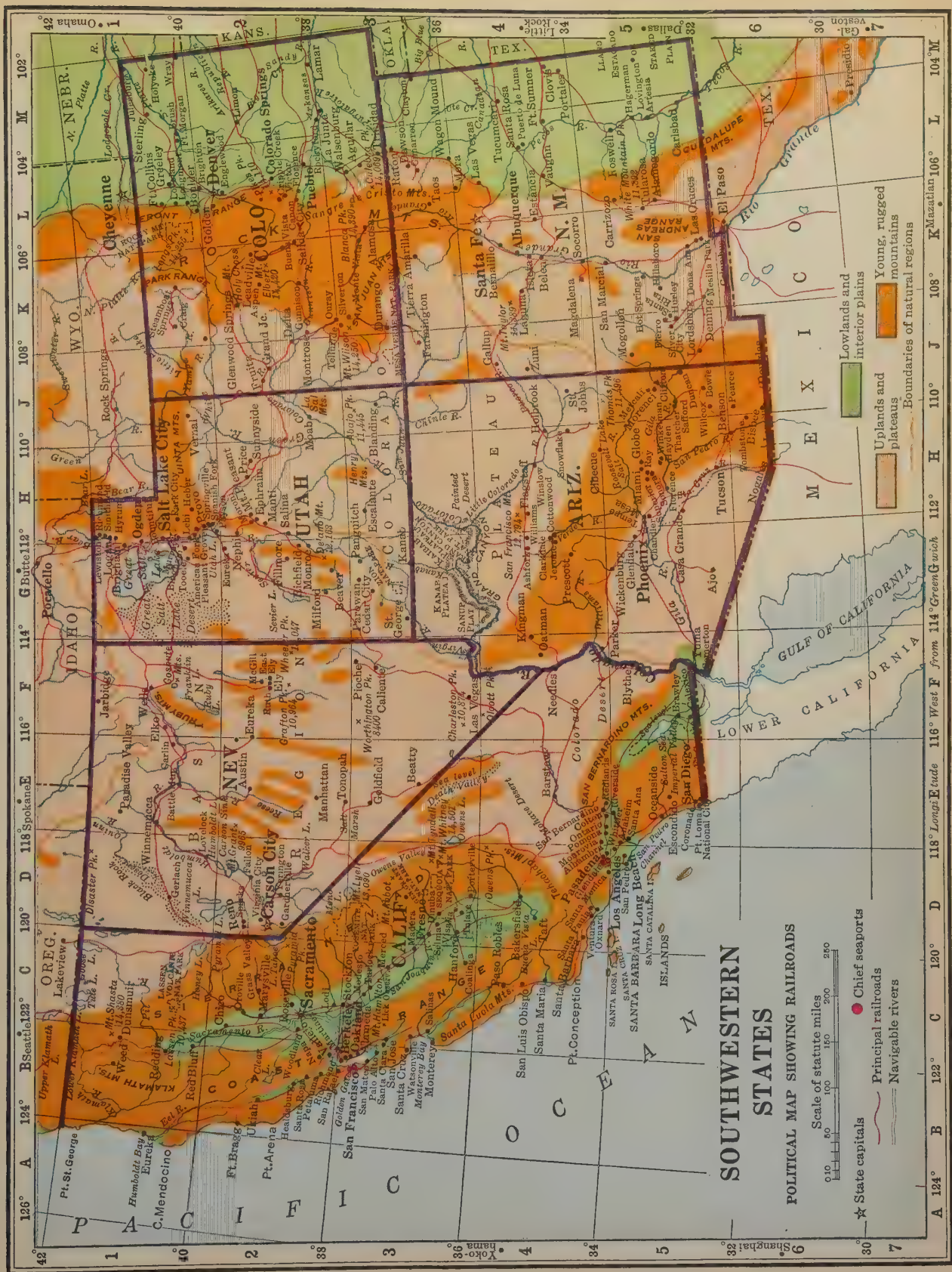
Each national forest is divided into sections, and each section has its own forest ranger. The ranger has many duties. He watches for fires that may be started by lightning or by careless campers or herders; and when fires break out, he takes charge of fighting them. He also counts all the sheep and cattle that enter his section of the forest in the spring, and during the summer he patrols the grazing lands to see that the animals are kept in the pastures assigned to them. Often he helps the herders to find lost cattle or sheep.

Another duty of the forest ranger is to mark the trees that are ready to be cut down. The government allows lumbering in the national forests, but only the trees marked by the rangers may be cut. In this way the government makes sure that only the older trees are cut down and that the younger ones are left to grow.

**The Wyoming Basin.** On the map on page 164 find the Wyoming Basin. This is one of the driest parts of the Rocky Mountain region, and farming is carried on only where the land can be irrigated from streams.

Most of the basin is covered with sagebrush, a low woody shrub which needs so little moisture that it grows in places that are almost deserts. There is also some grass, but it grows in bunches instead of being spread evenly over the ground. For this









Courtesy of Chicago, Milwaukee, St. Paul & Pacific R. R.

**Figure 165.** A train drawn by an electric engine in the mountains. Some of the railroads that cross the Rockies use electricity from hydroelectric plants.

reason it is called bunch grass. Most of the pasturage is too poor for cattle, but it can be used for sheep, and so the basin is mostly a region of sheep ranches. The larger towns are shipping points for wool and live sheep and lambs.

**The mountain streams and their use.** The rain that falls on the Rocky Mountains and the water from the melting snow collect in little brooks which join one another to make mountain streams. These streams flow swiftly down the steep slopes through deep valleys, or *canyons*. In many places they fall over cliffs, forming waterfalls.

Turn to the map on pages 10–11, and find the dotted line through the Rocky Mountains which marks the *Continental Divide*. Notice that the Continental Divide is a real dividing line between the streams that flow eastward from the mountains and those that flow westward.

You already know that the streams that rise in the Rockies provide water for irrigation in the mountains themselves and in the bordering regions. Because they are swift-flowing mountain streams, they also provide water power. Near many of the larger falls,

both in the mountains and along their borders, hydroelectric plants have been built. The electricity made in these plants is sent over wires to cities, towns, and mines.

All the larger mines in the mountains are lighted by electricity, and in most of them electric power is used in mining the ores, in hoisting them to the surface, and in crushing them in the mills. Electricity is also used in the refining of copper and some of the other metals. Figure 165 shows another way in which the electricity is used.

**Playgrounds in the mountains.** The Rocky Mountains are a wonderful vacation land, and thousands of people from all parts of the United States and from distant parts of the world visit them in the summer. Many come to see the national parks, and many come to spend their vacations in other parts of the mountains.

Glacier National Park is a wonderland of mountains, glaciers, and lakes. The government has built automobile roads through this park, and there are bridle paths and trails for those who like to ride horseback or climb.

Yellowstone National Park is different, but just as wonderful. Here, in many places, hot water from deep beneath the ground spouts high into the air in geysers, or natural fountains. In other places hot water from springs trickles down over terraces, or natural steps, of gorgeously colored rock. In this park also are the beautiful falls and canyon of the Yellowstone River. See Figure 166.

Rocky Mountain National Park and Grand Teton National Park have high mountains, deep valleys, and sparkling streams, and are wonderful vacation lands for people who like to camp, climb, and fish, and for those who enjoy mountain scenery.

The national forests are also playgrounds, for the government provides many places in them where people may camp and live out of doors during the summer.



**The entertainment of visitors.** All the people who come to the mountains in the summer must be fed and have places to live. Many hire camps or cottages, and many stay in hotels. Some wish to hire automobiles and drivers, and others want guides to take them camping, climbing, or fishing.

Besides the people who come for pleasure there are many who come for their health. The clear, dry mountain air is good for everyone, and for some kinds of illness it is the best possible cure. Caring for the visitors provides work for so many people that it is one of the most important kinds of business in the mountains.

### *Some Border-Line Cities*

**Cities on the eastern margin of the mountains.** The maps on pages 164 and 172 show that most of the larger cities of the Rocky Mountain states are not in the mountains themselves, but on their eastern borders. Work in these cities is

connected with farming, grazing, and mining in the mountains and the bordering plains.

Great Falls is not only a smelting center but also a center for flour-milling and meat-packing. Billings and Cheyenne are important centers from which cattle, sheep, and wool are sent eastward by train. Of what state is Cheyenne the capital?

Pueblo has smelting plants like those of Great Falls, and is a distributing center for supplies needed in the mining districts to the west and the grazing and farming lands to the east. What did you learn about Pueblo on page 162?

**Denver.** Denver, the capital of Colorado, is by far the largest and finest of these border-line cities, and is often called the "Queen City of the Plains." Find Denver on the map on page 169 (L2). Do you see that it is a gateway to the Rocky Mountains?

Denver was settled in the days when the Great Plains were still buffalo lands, and its first important industry was the smelting of

ores from the mountains. Later it began work connected with grazing and farming in the plains. Today it is one of the two most important meat-packing centers west of Omaha. Flour-milling and the manufacture of butter are also among its more important industries.

The map on page 169 shows that railroads from all directions meet in Denver, making it a busy railroad center. This, in turn, makes it a very important business center, both for the people of the mountains and for those of the plains.

Many of the miners, ranch-

men, and farmers sell their products in Denver and buy their supplies there. Besides its year-round work Denver has a large summer-tourist business. It is about a mile above the level of the sea, and for this reason it is cooler in summer than the cities on the plains farther east.

Colorado Springs is a much smaller city than Denver, but it too is a gateway to the mountains, and a health and pleasure resort. Only a short distance away is Pikes Peak, which is nearly three miles high. A railroad runs to the top, and thousands of visitors make the trip up the mountain each summer.



Photograph by Haynes

**Figure 166.** "Old Faithful," a famous geyser in Yellowstone National Park. It spouts hot water and steam high into the air about once an hour.





**Describing Rocky Mountain work.** Imagine that you live in the Rocky Mountains and that you are first one and then another of the persons listed below. Tell about the work that you do.

|                 |                      |
|-----------------|----------------------|
| A forest ranger | A sheep-herder       |
| A lumberman     | An irrigation farmer |
| A miner         | A tourist guide      |

**A list to make.** There are many things that you see or use each day which are made of the kinds of metals that are mined in the Rocky Mountains. Choose one of the metals listed below, and make as long a list as you can of things made partly or wholly from it.

gold      silver      copper      lead      zinc

*Turn over to page 174.*

### Group I      MAP STUDIES

1. Of the six Southwestern States which two have a share of the Great Plains? 2. Which one has a large share of the southern section of the Rocky Mountains? 3. What state lies almost wholly in the Great Basin? 4. What other states have a share of the Great Basin? 5. In what state are the Arizona Highlands? 6. What desert region is in southwestern Arizona?

7. What large state borders the Pacific coast? 8. What natural region in that state looks as if it were well suited to farming? 9. What mountains border the Valley of California on the east? on the west? 10. Does the coast of California look as if it had many good harbors? Give a reason for your answer. 11. As a whole, are the Southwestern States made up mostly of plains or of mountains and plateaus?

12. Now turn to the map on pages 10-11 and find the Rocky Mountains. 13. Notice that the northern section of these mountains is marked *8000 to 12,000 ft.* These figures show the *average summit elevations*, or the general height of the mountain tops above the level of the sea. 14. What is the height of the southern section of the Rocky Mountains? of the Sierra Nevada? of the Cascade Range? 15. Compare the height of these mountains with the height of the Appalachian Mountains of the East.

### Group II

1. Find the Great Basin on the map. 2. What mountains on the west make the Great Basin very dry? 3. Study the rivers that flow into the basin from the surrounding lands. Does any one of them find its way out of the basin? 4. Find Great Salt Lake. What does its name suggest to you about its water?

5. What kind of land do you find west of Great Salt Lake? 6. Find some other deserts in the Great Basin. 7. Find the national irrigation projects in this region. Are they in the midst of the basin or near its margins? 8. What kinds of work seem to be most important in this region?

### Group III

1. Find the Colorado Plateau on the map. 2. What river flows through this plateau? 3. Find a place in Colorado where the waters of this river are used for irrigation. 4. What mountains are south of the Colorado Plateau? 5. What kinds of work seem to be most important in those mountains? 6. What region is southwest of the Arizona Highlands?

7. Find the Mexican Plateau. 8. Most of this region is in Mexico. What two of our states have a share in it? 9. Find the river called the Rio Grande. The name *Rio Grande* is Spanish, and it means "Great River." 10. How are the waters of the Rio Grande used in New Mexico and Texas?

### Group IV

1. Mount Whitney in the Sierra Nevada is the highest mountain peak in the United States. Find it on the map (*D3*). How high is it? 2. What national parks are in the Sierra Nevada? 3. What kinds of work are important in these mountains? 4. The lowland between the Sierra Nevada and the Coast Range is called the Valley of California. What kinds of work are important there? 5. What are the two longest rivers of that valley? 6. Find the bay into which they flow. 7. What city on that bay is a seaport?

8. Find a lowland in southern California where there are many cities and towns. 9. What city in that lowland is a seaport?



Figure 167. Orchards in the Wenatchee Valley. There are miles and miles of orchards in the irrigated valleys bordering the Columbia Plateau, and the fruit is sent to many parts of the country.

#### 4. THE WESTERN PLATEAUS

With the help of Figures 12, 13, and 14 on pages 14 and 15, try to picture to yourself the high plateaus west of the Rocky Mountains. Notice their differences in surface, and remember that they are dry lands as well as high lands. Explain why they are so dry.

Vast stretches of the plateaus have less than 10 inches of rain each year, and only a few places have as much as 20 inches. All but the highest parts are too dry for trees, and some parts are deserts. Bunch grass grows in some places, but much greater stretches are covered with sagebrush or other desert shrubs.

Make a list of ways in which you think the people of the plateaus get their living. After you have finished studying these regions, check your list to see how nearly right you were.

Begin your study by working out the map studies in Group II on page 165.

**The story of the Columbia Plateau.** Long, long ago what we now call the Columbia Plateau was a region of mountains, hills, and valleys, somewhat like the Rocky Mountains today. Then something happened which changed the whole region. Through great

cracks in the earth melted rock called *lava* came up from deep beneath the ground. The lava was so hot that it flowed like a thick liquid, and it spread over thousands of square miles. Little by little it cooled and hardened into solid rock.

One flow followed another, until the lava filled the valleys, buried the hills, and covered all but the highest mountains. It has been a long, long time since the last lava flow, and the lava at the surface has decayed and crumbled to bits, giving the Columbia Plateau some of the richest soils in the United States. These soils are especially good for growing wheat.

**Wheat lands.** As you travel through the northern and eastern parts of the Columbia Plateau in Washington and Oregon, you will see miles and miles of wheat fields such as are shown in Figure 12 on page 14. This is the third great wheat-growing section of our country. Where are the two other wheat-growing sections? "Wheat work" in the Columbia Plateau is much the same as in the other wheat lands.

The Columbia Plateau has too little rain for many crops, but the moister parts are well suited to wheat because most of the rain comes in the winter and spring. Whether the wheat is planted in the fall or the spring, it gets the moisture that it needs while it is growing, and the dry, sunny days of summer make it ripen well. In many places where the rainfall is too little for yearly crops, the wheat farmers carry on dry farming.

Some of the wheat goes to flour mills in the cities of the plateau, and some goes eastward across the Rocky Mountains. Much more goes westward to flour-milling cities and seaports on the Pacific coast.



**Irrigated lands.** You have learned from the map that the Columbia River and its tributaries furnish water for irrigation in parts of the Columbia Plateau. Like the irrigated lands farther east, these are mixed-farming lands where the farmers raise a variety of crops and keep live stock as well. One of the most important crops on the irrigated lands is alfalfa, which is used to feed and fatten sheep and cattle.

**Famous fruit orchards.** Several of the irrigated sections are so well suited to orchards that they are famous for their fruit. Among them are the "apple valleys" on the borders of the Columbia Plateau. Find these valleys on the map on page 164, and study Figure 167. Perhaps you have seen a box of apples from the Hood River Valley in Oregon, or from the Yakima Valley, the Wenatchee Valley, or the Okanogan Valley in Washington.

**Stock-raising.** South of the wheat lands, the Columbia Plateau is mostly a grazing region. Both cattle and sheep are raised, but sheep-raising is the more important. From the ranches wool and live animals are sent to the East and to the Pacific coast.

The mountains on both sides of the plateau provide summer pasture lands for many of the cattle and sheep. The animals that are to be sold for meat are usually picked out at the end of the summer. Many of those that graze in the Rocky Mountains are sent eastward when they leave the high pastures.

When the cattle and sheep come back to the ranches in the fall, they graze out of doors until the weather is too cold. During the winter they are fed on alfalfa and other feed crops, some of which the ranchmen buy from the irrigation farmers. In the spring the sheep are sheared, and the wool is packed in bales. Much of it is sent to manufacturing cities in the East and some is used in woolen mills in Oregon and Washington. See *Figure 168*.



**Figure 168.** A Western boy holding the fleece of wool which has been clipped from the sheep at the right. The men who shear the sheep use either sharp hand shears or clippers run by electricity.

**A gateway city.** The only large city in the Columbia Plateau is Spokane, in eastern Washington. Find Spokane on the map on page 161 (*F2*), and study its location. Do you see that it is a railroad center and a gateway city to the East?

Because of its location and railroads, Spokane is the great business center of the Columbia Plateau. Products from the farms and ranches are collected there to be sent eastward, and manufactured goods from Eastern cities are distributed to the farming and grazing lands in the plateau, and to mining centers in the mountains. Manufacturing plants in the city make use of raw materials from the neighboring regions. Among the most important manufacturing industries are meat-packing, flour-milling, and the manufacture of lumber products. Why is Spokane a natural place for these industries?

**Other cities.** The other cities in the plateau are not large, but they are busy trading centers where farmers and ranchmen sell their products and buy their supplies. Among them are Yakima, Walla Walla, Boise, and Pocatello. Which of these cities is the capital of Idaho?



Figure 169. Part of the business district of Spokane. Why has the largest city of the Columbia Plateau grown up on the eastern margin of the region rather than on the western margin?

**Map work.** Before you read the next section, work out the map studies in Group II on page 173.

**The Great Basin.** The Great Basin is a high region, and yet it is basinlike because it is nearly surrounded by still higher lands. You have learned from the map that parts of this region are deserts. Some of the mountain ranges within it have trees on their summits, but most of the region is far too dry for trees, and much of it is too dry for grass. Vast stretches are covered with sagebrush.

The map shows that the streams that flow into the Great Basin do not find a way out. Many of them disappear because part of the water sinks into the dry ground and the rest evaporates. That means that it is taken up into the air in the form of water vapor. This is the same thing that happens when water on the sidewalk dries up after a shower.

Some of the streams empty into lakes which have no streams flowing out of them. The streams have salt dissolved in them, and as the water evaporates from the lakes, the salt

is left behind. This makes the lakes salty like the ocean. The water of Great Salt Lake is so dense, or heavy, with salt that people can float in it very easily.

Great Salt Lake is the largest lake in the basin, but it once spread much farther west and south than it does today. As the water has evaporated, the lake has shrunk in size, and parts of the land that it once covered are now deserts crusted with salt.

**The Salt Lake oasis.** The only place in the Great Basin where there are many cities and towns is along the western margin of the Wasatch Mountains in Utah. This part of the basin was settled by a

group of people called Mormons, who came from the East before there were any railroads west of the Mississippi River. Using water from the mountain streams, they turned a strip of desert into a land of irrigated farms. This part of Utah is sometimes called the Salt Lake oasis. Can you explain why?

Find the Salt Lake oasis on the map on page 172, and the two national irrigation projects within it. Water for the Strawberry Valley project comes through a long tunnel from the eastern side of the Wasatch Mountains.

A ride through the oasis will show you that the irrigated lands are mixed-farming lands. Sugar beets, wheat, potatoes, fresh vegetables, and fruit are the principal money crops, but sugar beets are the most important. In the summer you will see hundreds of people weeding the beet fields, and in the fall you will see long lines of freight cars being loaded with beets to be sent to the sugar factories.

Nearly all the farmers keep live stock, using part of their land for forage crops and part for pasture. Some have dairy herds, some raise beef cattle, and some raise sheep.



Alfalfa is the principal forage crop, though oats, barley, and a little corn are also raised to feed the cattle and sheep. Much beet pulp from the beet-sugar factories is also used to feed live stock.

Throughout the oasis there are many manufacturing plants where the products of the farms are prepared for use. Besides the beet-sugar factories there are flour mills, meat-packing plants, butter factories, and canneries for fruits and vegetables.

**Two cities of the Salt Lake oasis.** The Salt Lake oasis is thickly settled and has many busy trading towns. In the midst of it is Salt Lake City, the capital of Utah, and the largest city of the Western plateaus. Find Salt Lake City on the map on page 169 (*H1*), and notice its railroads. Then study Figure 170.

Because of its location, Salt Lake City is an eastern gateway for the Great Basin, just as Spokane is an eastern gateway for the Columbia Plateau. It is the business center of Utah, and the distributing point for supplies needed on the farms and ranches and in the mining districts of the state.

Farther north in the oasis is Ogden, a much smaller city, but a busy one because it is on a main railroad line between the East and the West. It is an important live-stock market, and the flour-milling center of the oasis.

**Mining centers.** Some years after the Mormons had settled on the eastern margin of the Great Basin, miners discovered rich ores of gold and silver on the western margin, in Nevada. Find this part of the basin on the map on page 172. For many years it was one of the busiest mining centers of the West, but little by little the ores gave out, and many of the mines were closed. Mining is



Figure 170. Part of Salt Lake City as it looks from an airplane. The large building in the distance is the state capitol. In line with it, but nearer you, is the beautiful Mormon temple.

still carried on there, but most of the people get their living by farming on the irrigated lands or by raising cattle and sheep.

On the map find other places in the Great Basin where the people get their living by mining. Notice especially the great mining centers in the mountains bordering the southern part of the Salt Lake oasis, and name the metals that are mined there. These mining districts have made Utah one of the leading states in the production of metal ores. See *Figure 171*.

Not far from the mines in Utah are several large smelters, and the smelting of ores is the leading manufacturing industry in the Salt Lake oasis. The mountain streams furnish electricity for the smelters, and coal is brought from mines in the east-central part of the state. On the map find the place where coal is mined in Utah.

**Map work.** Before you read the next paragraphs, work out the map studies in Group III on page 173.



Figure 171. A mountain of copper ore at Bingham, Utah. This is one of the richest copper mines in the world. The ore is scooped from the sides of the mountain by steam shovels.

**The Colorado Plateau.** Parts of the Colorado Plateau are so dry that they are deserts. Other parts are covered with sagebrush and bunch grass, and are used for grazing sheep and cattle. In the southwest there is a forested section, but it is small in comparison with the great stretches that are treeless.

**A desert wonderland.** The Colorado Plateau is a wonderland of strange and beautiful things. In the desert parts the rocks are of so many different colors that they look as if they were painted. One part of Arizona is called the Painted Desert, and as you look across it, you can see nearly all the colors of the rainbow.

In another part of Arizona is the Petrified Forest. There is no forest there today, but the ground is strewn with huge tree trunks which have petrified, or turned to stone. Long, long ago, when the trees were growing, the plateau must have had much more rain than it has today.

In southeastern Utah there are four won-

derful natural bridges of solid rock, the largest natural bridges in the world. Along the walls of several of the canyons in Mesa Verde National Park, in Colorado, are the ruins of the homes of people whom we call the cliff dwellers. See Figure 172.

**The Grand Canyon.** The greatest wonder of all is the Grand Canyon of the Colorado River in Arizona. It is 250 miles long, and part of it is more than a mile deep. There is no other canyon of such size and beauty in the whole world. Find Grand Canyon National Park on the map on page 172. In this park is the most beautiful part of the canyon, and people from all parts of the earth come to see it.

Figure 173 is a picture of the Grand Canyon, but no picture can give you any idea of how wonderful it is. As you stand on the rim, the river is over a mile below you. The opposite wall of the canyon is over ten miles away, and yet in the clear desert air it looks much nearer. Within the canyon are great hills made up of thick layers of rock of different colors — red, green, brown, and gray — and carved into pyramidlike shapes that make them look like painted temples.

If you wish, you can ride a horse or a mule down a narrow, winding trail to the bottom of the canyon. When you reach the river you will see that it is yellow and muddy. The mud is fine rock material, and it tells the story of the making of the canyon. For millions of years the river has been cutting down through the plateau, wearing away the rock materials and carrying the finer particles to the sea. Little by little the canyon has grown deeper and wider, and the river is still going on with its work today.





Figure 172. Ruins of the cliff dwellings. The cliff dwellers were Indians of long, long ago. They built their homes under overhanging cliffs on the steep sides of the mesas and the canyon walls, where they were safe from their enemies.

**Indian farmers and herders.** Long before the white men came to America, Indians living in the dry Colorado Plateau had learned to carry on farming by irrigation. Many of them lived on flat-topped hills called *mesas*, where they were safe from enemy tribes. Their little farms were on the lower lands, in places where they could flood the fields with water from the streams.

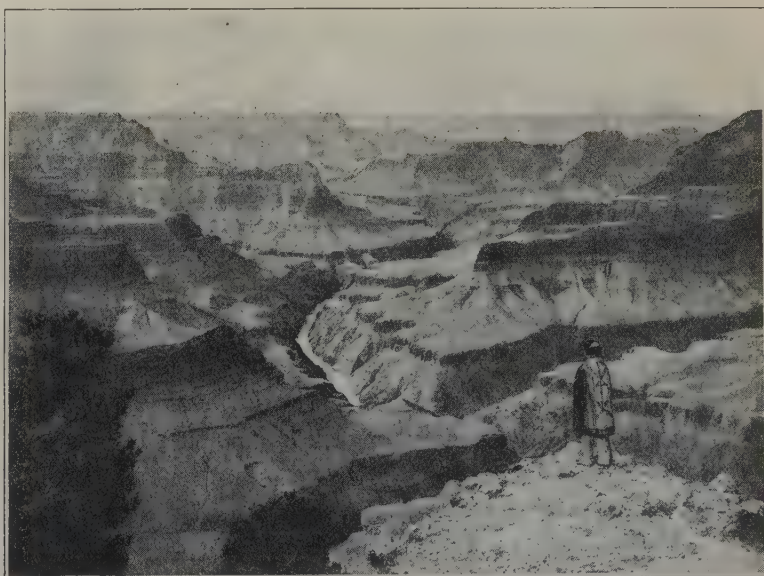
When white men came to the Colorado Plateau, they brought horses, cattle, and sheep—animals which were new to the Indians. Today many of the Indians of the Colorado Plateau are sheep-herders or cattle-herders, but others still carry on irrigated farming just as their forefathers did.

**Ranches and irrigated lands.** The regions of the Southwest are very dry, with hot summers and mild winters. Much of the Sonoran Desert and parts of the Colorado Plateau are too dry even for grazing. In the southeastern part of the Colorado Plateau, in the Arizona Highlands, and in the Mexican Plateau there are grass-

lands which provide fairly good pasturage. In these regions you will find ranches where cattle, sheep, and goats are raised.

On the map on page 172 find the places in the Southwest where the United States Government has made farming possible by means of irrigation projects. More than a hundred miles north of El Paso the government has built a great dam across the Rio Grande, making the largest irrigation reservoir in the world. Water from this reservoir is used to irrigate a long strip of land bordering the river in New Mexico and Texas.

Figure 174 shows another wonderful dam which the government has built across the Salt River in the Arizona Highlands. Find Roosevelt Lake on the map on page 172 (H5). This lake is the reservoir made by holding back the waters of the Salt River. The irrigated lands are west of the mountains, around Phoenix, the capital of Arizona. Still another irrigation project is near the western margin of the Sonoran Desert, and the water comes from the Colorado River.



Photograph by De Cou, from Ewing Galloway, N. Y.

Figure 173. Part of the Grand Canyon, which the Colorado River has carved in the Colorado Plateau in Arizona. Find the river in the picture. From the place where the Indian is standing, the opposite rim of the canyon is over ten miles away.



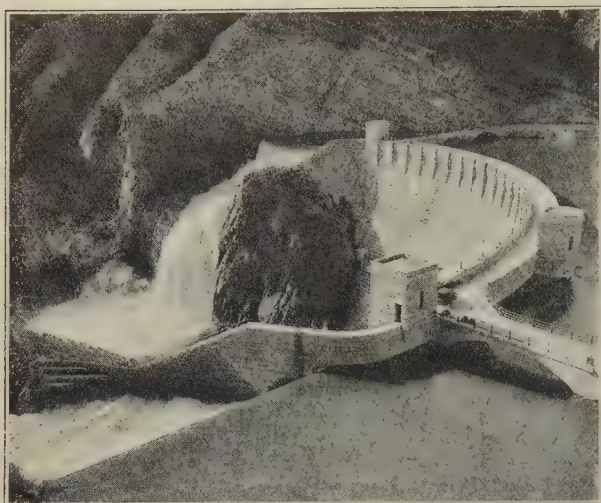


Figure 174. The great Roosevelt Dam in Arizona. The dam holds back the water of the Salt River, storing it for irrigating farm lands farther downstream.

These irrigated lands of the Southwest have a very long growing season, and as you travel through them, you will see crops that you did not find on the irrigated farms farther north. One of them is Egyptian cotton, an especially fine grade of cotton which is easily injured by rain, and can be grown best on irrigated desert lands. On the Salt River and Yuma projects you will see orange trees, olive trees, and other fruit trees which can be grown only in warm lands. See Figure 175.

**Mining in the Arizona Highlands.** The map shows that the Arizona Highlands are a great mining region. All the larger towns have grown up in places where metal ores are mined, and many of them have large smelting plants. The ores contain several different kinds of metals, but copper is by far the most important, and Arizona leads all the states in copper-mining. There are other mining centers in the Sonoran Desert on the west of the Arizona Highlands, and in the Mexican Plateau on the east. What part of New Mexico is an important mining section?

**A gateway to Mexico.** An important city in the Southwest is El Paso, Texas. Find

this city on the map on page 169 (K6), and study its railroads. Do you see that it is a railroad gateway between the United States and Mexico? Because of this, it is a great center for the exchange of products between the two countries. It is also a smelting center, using ores from Mexico as well as from mines in our own country.

*Some things to explain.* Give an explanation for each of the following facts:

1. The Western plateaus are dry lands because .....
2. The Columbia Plateau has rich soils because .....
3. There are salt lakes in the Great Basin because .....
4. Much wheat is grown in the Columbia Plateau because .....
5. More land is used for grazing than for farming in the Western plateaus because .....
6. More sheep than cattle are raised in these regions because .....
7. The government has established irrigation projects in the Western plateaus because .....
8. As a whole, the Western plateaus are thinly settled because .....



Figure 175. Date palms on the Salt River irrigation project. Notice the big bunches of fruit on the trees. Dates need a hot, sunny climate.





Figure 176. Lassen Peak. The cloud of steam and dust rising from this peak shows that the volcano is still alive.



Figure 177. Crater Lake, Oregon. The lake occupies a deep hollow formed when the top of the mountain fell in. The cone-shaped island was built up later by flows of lava and many explosions.

## 5. THE PACIFIC MOUNTAINS AND LOWLANDS

Turn to the map on pages 10–11, and study the differences between the Pacific coast lands of our country and the Atlantic coast lands. Notice that there is no broad coastal plain in the West as there is in the East. Instead, the Pacific coast is bordered by the Coast Ranges, and there are only a few places where the Pacific lowlands reach the sea. Farther inland are the Cascade Range and the Sierra Nevada, which, as you know, are much higher than the Appalachian Mountains of the East.

As you study about the people of the Pacific mountains and lowlands, watch for likenesses and differences between their work and the work of the people who live in the mountains and lowlands of the East.

Begin your study by working out the map studies in Group III on page 165.

**Mountains of the Far West.** You already know that the Sierra Nevada and the Cascade Range are high, rugged mountains, and that they receive so much rain from the westerly winds that their slopes are covered with thick forests. The Coast Ranges are much lower, but those north of San Francisco are so rainy that they too are thickly forested. The Coast Ranges farther south are drier and have fewer trees.

Some of the highest mountains in the Cascade Range were built up long, long ago by outpourings of red-hot lava and explosions of rock fragments from deep within the earth. In some parts of the world, mountains are being built up in that way today. The openings from which the heated rock materials come are called *volcanoes*, and the mountains are called *volcanic peaks* or *volcanic mountains*.

Figure 176 is a picture of Lassen Peak in California. The volcano which has built this peak is the only one in the United States that is active, or alive, today. The rest of the volcanoes have been dead, or nearly dead, for so long that snow fields have formed on the volcanic peaks, and glaciers move slowly down their slopes. Mount Rainier is the highest of these old volcanic peaks and has the largest number of glaciers. *See the frontispiece in this book.*

In Oregon there is an old volcanic peak the whole top of which has fallen in, leaving a deep, round hollow called a *crater*. The hollow has partly filled with water, forming Crater Lake, which is so beautiful that our government has made the old mountain a national park. *See Figure 177.*



Courtesy of Southern Pacific Co.

**Figure 178.** A logging railroad in Oregon. Railroads like this are built to the lumbering sections in the forests, and the logs are taken out on flat cars.

**Forests of the Northwest.** The mountains of the Northwest, in Washington, Oregon, and northern California, have the greatest forests found anywhere in the United States. In many places the trees crowd one another for a space to grow, and overhead their branches intertwine, making a leafy cover which shuts out much of the sunlight. Many of the trees measure five or six feet through their trunks, and the lowest limbs are often a hundred feet above the ground.

**The big trees.** The most wonderful trees of all are the giant sequoias in California. They are called the "big trees," and they are the largest and oldest trees in all the world. Many of them measure from twenty to thirty feet through their trunks. Some of them have been cut down, and the rings in their trunks have been counted. The number of rings shows that many of the giant sequoias are over 3000 years old. Some of the

finest of these old trees are in Sequoia National Park in the Sierra Nevada. The largest one is the General Sherman tree, which is thought to be 6000 years old.

**Lumbering.** The trees of the Northwest are mostly evergreen softwoods, and they provide a third of all the lumber cut in our country. The kinds that are cut in largest numbers are Douglas fir and Western yellow pine.

Since the forested mountains are too rough for farming, lumbering is the principal kind of work, and most of the people are lumbermen. With their families they live in camps of roughly built houses which are intended for use only so long as the lumbermen are at work in the neighborhood.

In spite of the rough surface of the mountains, railroads have been built to carry the logs to the sawmills. Follow one of these railroads into the mountains, and you will see how the logging is done. You will find the lumbermen sawing through the thick trunks of the trees, and you will want to keep well out of the way when a tree comes crashing to the ground.

As soon as a tree is down, the lumbermen cut off the branches and saw the trunk into logs. Then strong wire cables are attached to the logs, and one by one they are dragged or lifted to the railroad track and loaded on flat cars. The power for moving the logs is furnished by a "donkey" engine which is set up near the railroad track. Figure 178 shows one way in which the logs are taken out of the forests.

From the mountain forests the logs are carried to sawmills, or lumber mills, on the lower lands. In some places where lumbering is carried on near a good-sized stream, the logs slide down the steep hillsides in chutes to the river below. There they are often bound together in big rafts and towed to the sawmills.





Figure 179. Loading lumber on ocean-going ships at a Puget Sound port. Lumber and lumber products together form one of the two leading exports from

Washington and Oregon to distant lands. Turn to the map on page 164 and name the countries which buy large quantities of lumber from these two states.

**National forests.** There are many national forests in the mountains of the Northwest that are used and cared for in the same way as the national forests in the Rockies. The government is doing all it can to prevent forest fires and to keep young trees growing to take the place of the older ones which are cut for lumber. This work is being done so that the Northwest may go on producing large quantities of lumber each year without danger of the supply's ever giving out.

**Puget Sound Lowland.** The map on page 164 shows that the lowland bordering Puget Sound extends far to the south, joining the valley of the Willamette River in Oregon. This whole stretch of low, rolling land forms the Puget Sound Lowland, but the part in Oregon is more often called the Willamette Valley.

This lowland receives so much rain that the first settlers found most of it covered with thick forests. Around Puget Sound and in the Willamette Valley much of the land has been cleared of trees and is now used for farming; but in the central part of the lowland there are still large tracts of forest, and much lumbering is carried on.

**Lumber-manufacturing.** After what you have learned about work in the surrounding mountains, you will not be surprised to find that the Puget Sound Lowland and the Willamette Valley have hundreds of lumber mills, where logs from the forests are sawed into rough lumber, such as boards, shingles, barrel staves, fence pickets, and railroad ties.

Besides the lumber mills there are many planing mills, where better-finished lumber products are made. Among the products are doors, blinds, window sashes, and other manufactures of wood used in building houses.

There are so many lumber mills and planing mills in the lowland that this region is the greatest lumber-manufacturing section of the United States. Lumber and lumber products are the leading manufactures of Washington and Oregon. *See Figure 179.*

**Climate and farming.** Although the lowland region of the Northwest is as far north as New England, it has a milder climate, for the winds from the Pacific Ocean keep the winters from being cold and the summers from being very hot. Snow seldom falls on the lowest lands, roses bloom at Christmas time, and the grass is green most of the year.



Figure 180. Picking raspberries in Washington. Many boys and girls in the Northwest earn money in the summer vacation by helping to pick the berry crops.

A long growing season and abundant rain make the lowland an excellent mixed-farming region. Many different crops are raised, and there are live stock of one kind or another on most of the farms. The grass makes excellent pasturage, and hay grows especially well. For this reason dairying is a leading kind of farming, and much butter, cheese, and condensed milk are made. Since these dairy products keep well, they are sent to many other parts of the country.

As you travel through the lowland, you will see acres and acres of well-tended orchards. Apples, pears, plums, and cherries grow especially well in the mild, moist climate, and next to dairying, fruit-growing is the most important kind of farming. Besides the tree fruits, berries are grown in large quantities. If you visit the lowland in summer, you will see hundreds of people picking blackberries, raspberries, and loganberries. See *Figure 180*.

Much of the fruit is sold fresh, but much more is sent to canning factories where jams, jellies, preserves, and fruit juices and sirups are made. Canned fruits and bottled juices are sent to all parts of the United States.



Figure 181. Fishermen hauling up a net full of salmon from a trap in shallow water near the shore. Thousands of salmon are caught at one time in this way.

Prunes, which are a variety of plums, are grown and dried in large quantities in the Willamette Valley.

**Salmon-fishing.** In almost any grocery store you will find cans of salmon from Washington or Oregon. These fish are so abundant in the westward-flowing streams of the Northwest and in the waters along the coast that salmon-fishing and salmon-canning provide work for thousands of people.

Full-grown salmon are from two to four feet long. They spend most of their lives in the ocean, but they have certain habits which make them easy to catch in the rivers and near the mouths of the rivers.

The young salmon are hatched in quiet streams and lakes often hundreds of miles from the sea. As soon as they are big enough, they swim down the streams to the ocean, where they grow large and fat. Every year large numbers of full-grown salmon come back to the streams and lakes to lay their eggs. Often they swim upstream for hundreds of miles, struggling against the rapids, and sometimes leaping over waterfalls.

The salmon-fishing season is usually from May until October, when the salmon are





© Pierson Photo Co.

Figure 182. An airplane view of Seattle. In the lower left corner of the picture you can see part of the water front on Puget Sound, with its piers and factories. In

the distance is Lake Union, which forms an inner harbor for Seattle. A canal deep enough for large ocean ships leads from Puget Sound to Lake Union.

swimming up the rivers. The fishermen set nets and traps of various kinds in the rivers and at their mouths, and they often catch thousands of salmon at a time. *See Figure 181.*

Some of the salmon are sold fresh, but most of them are canned and sent to all parts of the United States and to distant lands. The larger canneries are on the shores of Puget Sound and along the lower part of the Columbia River.

**Cities of the Northwest.** Nearly all the larger cities of western Washington and Oregon are in the lowland region, and about two thirds of the people in both states live there. The largest cities are the chief seaports. They are gateways to the Pacific Ocean just as the larger seaports of the East are gateways to the Atlantic Ocean.

The shore of Puget Sound is so crooked that it provides any number of good harbors. On two of the best harbors are Seattle

and Tacoma. Seattle is the largest city in Washington, and Tacoma is the third largest.

Farther south, the Columbia and Willamette rivers have been deepened to make a waterway for large ocean ships to Portland, Oregon, making that city an important seaport.

Find Seattle, Tacoma, and Portland on the map on page 161 (C2 and C3). Notice that all three are centers where railroads from the north, south, and east meet ships from the Pacific Ocean. This meeting of trade routes makes Seattle, Tacoma, and Portland important business and manufacturing centers as well as busy seaports. *See Figures 182 and 183.*

**Ocean trade.** Turn to the map on page 164 and name the things that you may expect to see being loaded on ocean-going ships at the seaports of the Northwest. Among the exports, what ones are important products of Washington and Oregon? Only the leading





Figure 183. An airplane view of Portland, Oregon, showing the business section and part of the water front on the Willamette River. Portland is located

near the junction of the Columbia and Willamette rivers, about 100 miles from the ocean. What has been done to the rivers to make Portland a seaport?

exports are named on the map. Many others from distant parts of the United States pass through these Pacific gateways on their way to other countries.

The export and import arrows on the map show the principal countries with which the seaports of the Northwest carry on trade. Make a list of these countries, and then locate each one on the map on pages 300–301. How many of them border the Pacific Ocean?

Among the lands which you have located on the map is Alaska, which is a territory belonging to the United States. Seattle and Tacoma are the principal ports through which trade with Alaska is carried on. Why?

The map shows that many of the more important imports are raw materials for manufacturing. Some of them are used in the Northwest. For example, much lumber from Canada is used in the planing mills on Puget Sound, and copper from Canada, Chile, and Alaska is smelted at Tacoma. On the other hand, many of the raw materials are sent

eastward by train. Among the imports which are forwarded to the East raw silk from Japan and China is the most valuable.

**Manufacturing in the Northwest.** The lowland region of the Northwest is well suited for manufacturing, for the streams from the mountains provide electric power, and coal is mined east of Puget Sound. The principal manufactures are those which make use of products of the farms, forests, and fisheries. Among the manufacturing plants of greatest importance are lumber mills, planing mills, canneries for fish and fruit, flour mills, meat-packing plants, and butter and cheese factories.

Seattle, Portland, and Tacoma are the leading manufacturing cities. All three have many different manufacturing plants, but lumber mills and flour mills are the most important. Wheat for the flour mills comes from farms in the lowland and from the Columbia Plateau. Seattle is the leading meat-packing center of the Northwest.



**The Valley of California.** The Valley of California is the great lowland formed by the valleys of the Sacramento and San Joaquin rivers. It stretches from north to south for 450 miles between the Sierra Nevada and the Coast Ranges, and in places it is more than 50 miles wide. Between the Coast Ranges there are other valleys, but they are much smaller. Do you know what first brought large numbers of people to the Valley of California?

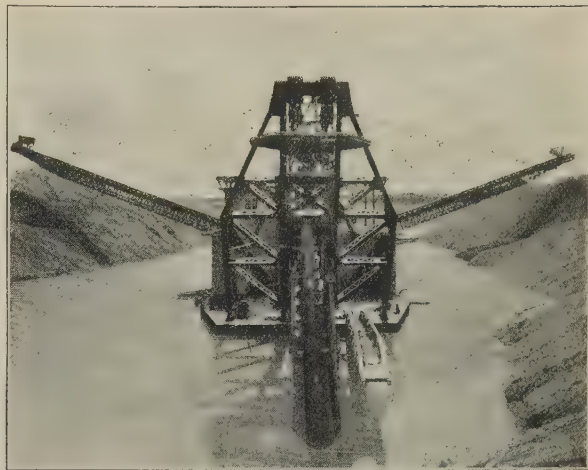
**The great "gold rush."** Until the year 1848 there were very few white people in California. Then gold was discovered in the sandy bed of a stream in the Sacramento Valley, and thousands of men rushed to California, hoping to make themselves rich by mining gold. Many of them found gold, but few found enough to become rich. All together, however, they soon made California a great gold-mining region.

The early miners hunted for the precious metal in the beds of the streams, where the bits of gold were mixed with sand and gravel. The miners loosened the gravel with pick-axes and shoveled it into large wooden boxes. Then, when water was allowed to run through the boxes, the sand and gravel were washed away, and the gold, which was heavier, was left behind.

**Gold-mining today.** Getting gold or other metals from stream gravels is called *placer mining*. Much gold is still being taken from the stream gravels in California, and this state leads in gold-mining. Figure 184 shows how the work is done today.

The gold in the stream gravels has been brought from the Sierra Nevada by rivers which have cut into veins of ore in wearing down their valleys. In places in the Sierras gold is mined from veins deep in the earth just as it is in the Rockies.

**How gold led to settlement and farming.** The gold rush brought thousands of people



U. S. Bureau of Mines

Figure 184. A floating gold dredge in California. The big machine scoops the sand and gravel from the stream bed with a chain of buckets, separates the gold from them, and then dumps the worthless rock material along the banks of the stream.

to California, many of whom soon tired of hunting for gold. Some went home, but many stayed and began to carry on farming and stock-raising. People in other parts of the country soon learned that there were rich farm lands in California, and every year more and more people moved into the state. Today California's crops are worth far more than its gold.

**Climate and farming in central California.** Turn to Figure 194 on page 200 and tell how much rain the Valley of California receives each year. This, as you know, is too little for most crops. Fortunately, many rivers tumble down the slopes of the Sierras, crossing the eastern side of the valley to join the Sacramento and the San Joaquin. These rivers are the great gift of the mountains to the valley, for they furnish water for irrigation.

The Valley of California has very mild winter weather and a long growing season, — so long that cotton is grown in the southern part of the San Joaquin Valley, and oranges in a part of the Sacramento Valley that is as far north as southern New Jersey. The mildness of the winter is due partly to



Figure 185. Picking peaches near Merced in the Valley of California. Many California peaches are sold fresh, and large quantities are canned or sun-dried.

the warm westerly winds from the Pacific Ocean, and partly to the high Sierras, which shut out the cold winds from the central part of the United States. Most of the rain falls in the winter, and the summers are hot and dry. This is just the right kind of climate for winter wheat and barley, and these are the two great grain crops of the valley.

Because the summers are so dry, few crops except wheat and barley can be grown without irrigation. On the irrigated lands dairying, market gardening, and fruit-growing are the principal kinds of farming.

**Fruit-growing.** You cannot travel far in the Valley of California or in the smaller valleys between the Coast Ranges without learning that fruit-growing is the leading kind of farming. Miles and miles of irrigated lands are planted with fruit trees — peaches, prunes, apricots, pears, cherries, and even figs and olives. In certain sections among the foothills there are groves of orange trees. In some places grapes are the principal crop, and in others there are large orchards of walnut and almond trees. See Figure 185.



Figure 186. Acres of prunes drying in the sunshine in the Santa Clara Valley in California. California sun-dried prunes are sold in all parts of the country.

It is the climate that makes these valleys so well suited to fruit-growing. The long growing season lessens the danger of frost, and the dry air and hot sunshine in summer make the fruit firm and juicy. Besides this, the rainless summers make it possible to dry fruit out of doors. In the harvest season whole fields are covered with trays of prunes, peaches, apricots, or raisin grapes drying in the sunshine. See Figure 186.

**How the fruit-growers help one another.** The fruit-growers in different sections of California specialize in different fruits. For example, many in the Santa Clara Valley, south of San Francisco, grow prunes, while many around Fresno, in the San Joaquin Valley, raise grapes.

In many neighborhoods the fruit-growers have banded together in associations to help one another. Many of the associations own packing houses where dried or fresh fruits raised by all the members are sorted and packed for shipment. Others own canneries where fresh fruits are preserved. Each association has a special name for its fruit, and



many advertise their products all over the country.

**Dairy-farming.** Many of the farmers in central California specialize in dairying, and get their living by supplying the cities with milk and cream. The two principal forage crops for the cows are alfalfa and winter barley. They are also used to feed beef cattle and sheep, which, with dairy cows, are the principal kinds of live stock raised on the farms.

**Vegetable-growing.** There are many places in central California where fresh vegetables are raised for the city markets, but the greatest vegetable-growing section is on the delta at the mouths of the Sacramento and San Joaquin rivers. Here you will see thousands of acres of tomatoes, potatoes, asparagus, onions, celery, lettuce, and other vegetables, which are grown mostly for shipment to cities in the East. Much asparagus and many tomatoes are canned and sent to other parts of the United States and to distant parts of the world.

**California rice fields.** Farther north, in the Sacramento Valley, you will see many rice fields, which will remind you of Texas and Louisiana. They are surrounded by dikes so that they can be flooded when the rice plants need to be under water, and then drained before the harvest season. This is the only important rice-growing district of our country outside the Southern States.

**Cities and towns in the valley.** The larger cities and towns in the Valley of California are trading centers, where the farmers and fruit-growers buy their supplies, and in many of them there are canneries and packing houses for fruit. The largest city of the Sacramento Valley is Sacramento, the capital of



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Figure 187. A map showing the location of San Francisco and the neighboring cities across the bay. How do ships enter San Francisco Bay from the ocean? What cities are on the eastern side of the bay? Which one of them is a terminal for railroads?

California. In the San Joaquin Valley the largest city is Fresno, the business center of the great raisin-growing district.

**The cities on San Francisco Bay.** The most densely settled part of central California is around San Francisco Bay. Turn to the map on page 169 and you will see why. First find the narrow strip of water known as the Golden Gate. This leads into San Francisco Bay, which forms a large, safe harbor for ships. Notice how many railroads meet on the eastern shore of the bay. You can see that San Francisco Bay is a natural gateway between the Valley of California and the ocean, and a meeting place for steamship lines and railroad lines. That explains why so many cities and towns have grown up around the bay.

Oakland, on the eastern side of the bay, is the Pacific end of railroads which connect the East with the West. San Francisco, on the



© Gabriel Moulin

Figure 188. A view of San Francisco from the bay. The boats that you see in the picture are some of the ferries which run back and forth between San Fran-

cisco and the cities on the east side of the bay. Along this part of the water front and farther to the left and right there are piers for ocean liners and freighters.

western side, is the great seaport of central California, and the second largest city of the West. It is connected with Oakland and other cities across the bay by ferryboats which carry passengers, automobiles, and freight. *Study Figures 187 and 188.*

From San Francisco, steamship lines for both passengers and freight run to Asia, Australia, the Hawaiian Islands, and South America. Others run to ports on the Atlantic coast and to Europe by way of the Panama Canal. Like the seaports of the Northwest, San Francisco carries on much trade with the lands bordering the Pacific Ocean. What does it export to some of those countries? What does it import from them?

San Francisco began its growth as a seaport in the days when gold was discovered in California, and it was not long before other settlements were made on the shores of the bay. As more and more people settled in the Valley of California, more and more trade came to San Francisco and the other "bay towns" because they were at the gateway between the valley and the sea. With the

coming of the railroads these towns grew very fast, and some of them have become large cities and busy manufacturing centers.

**Manufacturing around the bay.** The cities bordering San Francisco Bay now form one of the principal manufacturing districts of the Pacific coast states, and they turn out a great variety of manufactured products. Both San Francisco and Oakland have automobile factories, shipbuilding plants, foundries and machine shops, factories for the manufacture of electrical machinery, lumber-planing mills, and canneries for fruits and vegetables. San Francisco is a center for the manufacture of clothing and for meat-packing.

As time goes on, more and more manufacturing will be carried on in the bay cities. Raw materials are obtained easily by rail and boat, oil from the San Joaquin Valley and southern California provides fuel for steam power, and electric power is furnished by hydroelectric plants in the foothills of the Sierras. More people will come to live in California, and this will give the manufacturers larger markets for their goods.



**California oil fields.** Turn to the map on page 172, and find the oil fields of California. Notice that oil and natural gas are found in the southern part of the San Joaquin Valley and also farther west and south. The greatest oil fields are those in southern California. Together, all the oil fields make California one of our greatest oil-producing states.

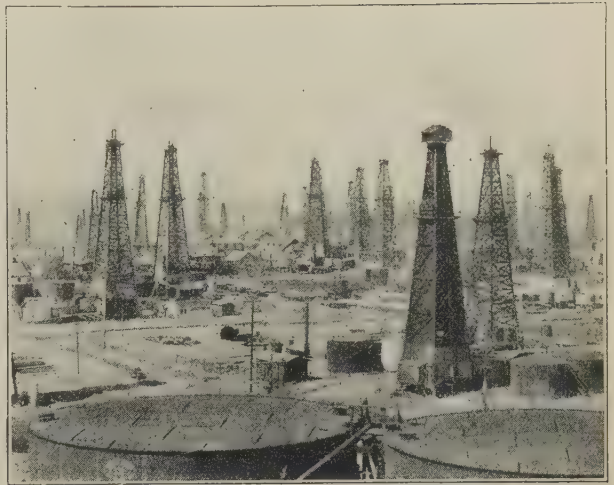
When you visit Los Angeles, you will see oil derricks rising near the houses in some parts of the city, and just beyond the thickly settled section you will see the oil field shown in Figure 189.

Pipe lines and tank cars carry the oil to many different cities where there are refineries. One of the great refining centers is on San Francisco Bay, and from there large quantities of gasoline, kerosene, and other refined oils are shipped to distant lands.

The rich stores of oil beneath the ground have been a great help to the growth of California, for the state has almost no coal. The oil provides fuel to make steam power for many of the manufacturing plants and most of the railroads of the state, and for many of the steamships that run from California ports to all parts of the world. Oil is also one of the leading exports of California.

**Southern California.** On the map on page 172 find the Tehachapi Mountains, which form the southern boundary of the San Joaquin Valley. South of this mountain range are the mountains and valleys of southern California. The map shows that the largest lowland in this region is packed with cities and towns. More than two million people live in this lowland. Can you think of any reason why so many people live here?

**How the climate attracts people.** If you ask a southern Californian what has brought so many people to the region, he may answer you in one word — climate. The rainfall is light and comes mostly in the winter, while the summers are almost rainless. The sum-



U. S. Bureau of Mines

**Figure 189.** An oil field at Los Angeles. The lowland in which Los Angeles is located is the richest oil-producing district of California.

mer days are often hot, but the nights are cool; and since the air is dry, the heat of the day is not hard to stand. Breezes from the ocean cool the land along the coast during the day.

In winter the rains do not come often enough to make the weather disagreeable, and most of the winter days are warm and sunny. The trees and grass are fresh and green, flowers are in blossom, and people can be out of doors in light clothes all the time.

The climate is so delightful that thousands of people who dislike cold winter weather have left their homes in other parts of the country and have gone to southern California to live. Thousands of others spend their winters there.

Besides having a pleasant climate, southern California has a great variety of scenery. It is especially beautiful in the winter time, when the valleys are green and the neighboring mountains are capped with snow. Along the coast there are rocky cliffs and smooth, sandy beaches. Both the seashore and the mountains attract large numbers of people.

**Climate, irrigation, and crops.** Climate has not only brought thousands of people to southern California, but it has also played a



© Spence Airplane Photos

Figure 190. A view of Los Angeles showing part of the business section. In 1900 Los Angeles had somewhat over 100,000 people. Look on page 302 and tell how many people it has today.

large part in determining how they shall make their living. As you ride through the lowland in which Los Angeles is located, you will see thousands of small farms on which fruit and vegetables are the principal crops. If you visit the smaller valleys, you will find that they too are crowded with orchards, citrus-fruit groves, and vegetable gardens. See *Figure 149 on page 155.*

The frostless season in these valleys is from seven to nine months long, and there is no danger of frost from March until November. Even in winter there is not usually enough frost to harm the fruit trees. Most of the rain falls between November and April, and so the summer weather is very dry. Often in summer, and sometimes in winter, there is no rain for weeks at a time. For this reason farming is carried on mostly by irrigation.

Turn to the map on page 172, and find the San Bernardino Mountains (*E4*). These mountains are high enough to make the westerly winds give up a considerable amount of moisture in winter, and from 20 to 40 inches or more of rain falls on their western slopes each year. Reservoirs have been made in the mountains to store up the water, and wells have been sunk in the valleys to obtain water from underground. Miles and miles of canals and pipe lines carry the water from the reservoirs and wells to the farms.

**Fruits and vegetables.** Of all the fruits grown in southern California, oranges and lemons are the most important. Since these citrus fruits are easily damaged by frost, most of the groves are on the lower slopes of the mountains. Why is there less danger of frost there than on the floor of the val-

leys? You learned the reason on page 66.

In addition to the citrus-fruit groves there are many vineyards in southern California, many orchards of peaches, pears, and apricots, and many groves of olive trees and walnut trees. The fruit-growers have associations for packing, shipping, and advertising their products just as those in central California do.

The frostless season is so long that the vegetable-growers can raise several different crops on the same land each year, and the winter is so mild that they send large quantities of early and late vegetables to the East. These vegetables reach the city markets before the Eastern market gardeners have begun their work in the spring and after they have had to stop work in the fall.

A few crops are grown without irrigation





Courtesy of Charles H. Owens and *Los Angeles Times*

Figure 191. A map showing the location of Los Angeles and the neighboring cities. What part of Los Angeles is famous for moving pictures? Find Los

in southern California, but they are far less important than the crops of the irrigated lands. On some of the lower mountain slopes and in some of the valleys there is enough rain in winter for the growth of winter wheat and barley, and these are the two grain crops of the region.

**Dairying and stock-raising.** Because there are so many people in southern California, many farmers specialize in dairying to supply the cities and towns with milk and cream. Alfalfa is the principal forage crop on the dairy farms, and is grown on irrigated land.

The lower mountain slopes along the coast are grassy, and provide good pasturage for cattle and sheep. Many of the animals are sent to meat-packing plants in Los Angeles.

**Los Angeles.** Figure 190 shows part of Los Angeles, the great business center of southern California and the largest city of the West.

Angeles Harbor and the breakwater which protects it. Prove by this map that people who enjoy the mountains and the seashore may find both near Los Angeles.

Turn to the map on page 172, and study the location of this city. Is it on the seacoast?

Since 1900 several things have happened to make Los Angeles grow faster than any other large city in the United States. One thing was the discovery of oil, which brought thousands of people to southern California and provided cheap fuel for manufacturing. Los Angeles is now a leading manufacturing center with many different kinds of mills and factories. Some of the more important kinds of manufacturing carried on there are printing and publishing, the making of moving-picture films, meat-packing, and the manufacture of furniture and clothing.

Another great help to growth was the starting of the moving-picture industry. Los Angeles and Hollywood, which is a part of Los Angeles, have become the world's greatest center for the taking of "movies" and the



Pictorial California

Figure 192. A field of cotton in the Imperial Valley. Tell all you know about the needs of the cotton plant and why it grows so well here.

manufacture of moving-picture films. The growth of this great industry has been due largely to the climate and scenery. Pictures can be taken out of doors the year round, and there is seldom enough rain to interrupt the work of the actors and photographers for long at a time. The scenery is so varied that almost any kind of play can be "staged" within a hundred miles of Los Angeles.

**Changing an inland city into a seaport.** As Los Angeles grew larger, the people decided that even though it was some distance from the sea, they would make it a seaport. So they annexed a strip of land leading to the little coastal town of San Pedro, 25 miles away. With the help of the government, they deepened the harbor of San Pedro and built a long breakwater to protect it from storms and to provide space for a large number of ships. Today Los Angeles is one of the four chief seaports on the Pacific coast, with steamship lines running to Asia, Australia, Mexico, South America, Hawaii, and other parts of the world. See Figure 191.

**Bringing water to Los Angeles.** The people of Los Angeles have had a great problem to solve in getting a large enough water supply for the city. Water is now brought all the way from Owens River near Mount Whitney in the Sierra Nevada. It comes to Los Angeles by a great aqueduct which is made up of canals, tunnels, and huge pipes of steel and concrete. The distance is nearly 250 miles, and the aqueduct crosses hills, valleys, and deserts. In the mountains north of Los Angeles, power plants have been built along this great aqueduct. As the water passes through the power plants, it is used to make hydroelectricity which helps to provide light and power for Los Angeles and neighboring cities in the thickly settled lowland.

**Other cities of southern California.** Near Los Angeles is Pasadena, a city of beautiful homes, and on the coast is Long Beach, a favorite resort for visitors, both in summer and in winter. The southernmost city in California is San Diego, which is a business center and a port of some importance. It is also a favorite resort for winter visitors.

**The Imperial Valley.** Turn to the map on page 172 and find the Imperial Valley in the southernmost part of California. This valley is one of the driest parts of the United States, for it is shut off from the Pacific Ocean by mountains, and part of it is below the level of the sea. In 1900 it was a lonely desert. Today the southern part of it is irrigated with water from the Colorado River, and it is one of the "garden spots" of the West.

The Imperial Valley is a *subtropical*, or almost tropical, region, so warm that crops can be raised the year round. Oranges, olives, dates, and other fruits which can be grown only in warm lands are raised there, and Egyptian cotton is a leading crop. Many of the farmers raise winter vegetables which they send to city markets in the Central States and in the East. See Figure 192.



**East, West, or both?** Tell where you would see each of the things named below, — in the states bordering the Atlantic coast, in the states bordering the Pacific coast, or in both groups of states:

1. Citrus-fruit groves.
2. Salmon canneries.
3. Cranberry bogs.
4. Fruit drying in the sun.
5. Oyster canneries.
6. Dairy farms.
7. Placer mining for gold.
8. Codfish drying in the sun.
9. Irrigated farms. *both*
10. Ships from distant lands. *both*
11. "Turpentine" pines. *atlantic*
12. The greatest forests in the country.

**Sentences to complete.** Prove that you know the important facts about the mineral products of the West by completing these sentences:

1. The five most important metals mined in the West are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
2. The leading copper-mining state is \_\_\_\_\_.
3. The great copper-mining center in Montana is \_\_\_\_\_.
4. The great copper-mining center in Utah is \_\_\_\_\_.
5. The most important metal mined in the Cœur d'Alene district of Idaho is \_\_\_\_\_.
6. The leading gold-mining state is \_\_\_\_\_.
7. The two leading oil-producing states of the West are \_\_\_\_\_ and \_\_\_\_\_.

**Can you name these gateway cities of the West?**

1. The gateway to the southern Rockies.
2. The eastern gateway of the Columbia Plateau.
3. The eastern gateway of the Great Basin.
4. A gateway to Mexico.

**Can you name these coastal cities of the West?**

1. The seaport on San Francisco Bay. *San Francisco*
2. The seaport near the junction of the Willamette and Columbia rivers. *Portland*
3. Two seaports on Puget Sound. *Seattle, Tacoma*
4. An inland city which has become a seaport.
5. The railroad center on San Francisco Bay. *Oakland*

**A combination test.** This test is a combination of making choices and giving reasons. In each sentence you are to choose the correct word or phrase from those in parentheses, and then complete the sentence by giving reasons for the fact which it states.

1. Much of the western part of the Great Plains is used for (dairying) (grazing) (mixed farming) because \_\_\_\_\_.
2. There are many (mining) (manufacturing) (fishing) centers in the Rocky Mountains because \_\_\_\_\_.
3. Many farmers in the Columbia Plateau raise (corn) (cotton) (wheat) because \_\_\_\_\_.
4. There are many (irrigation projects) (summer playgrounds) (national forests) in the Western plateaus because \_\_\_\_\_.
5. The Puget Sound Lowland and the Willamette Valley have many (steel mills) (lumber mills) (smelters) because \_\_\_\_\_.
6. The valley lowlands of California are great (lumbering) (coal-mining) (fruit-growing) regions because \_\_\_\_\_.

**Western pictures.** Below is a list of pictures which a traveler took in the West, and a list of the states in which he took them. The number after each state tells how many pictures were taken there. Name the pictures taken in each state.

#### LIST OF PICTURES

|                       |                    |
|-----------------------|--------------------|
| Natural bridges       | Great Salt Lake    |
| The Petrified Forest  | The Golden Gate    |
| Glacier National Park | Mount Rainier      |
| Geysers               | The Painted Desert |
| An active volcano     | Cliff dwellings    |
| Crater Lake           | Mount Whitney      |
| The Grand Canyon      | The Big Trees      |

#### LIST OF STATES

|                |                |
|----------------|----------------|
| Arizona (3)    | Oregon (1)     |
| California (4) | Utah (2)       |
| Colorado (1)   | Washington (1) |
| Montana (1)    | Wyoming (1)    |

**Special credit work.** Find out all you can about one of the national parks of the West and tell your class about it. Try to get some pictures to illustrate your talk.

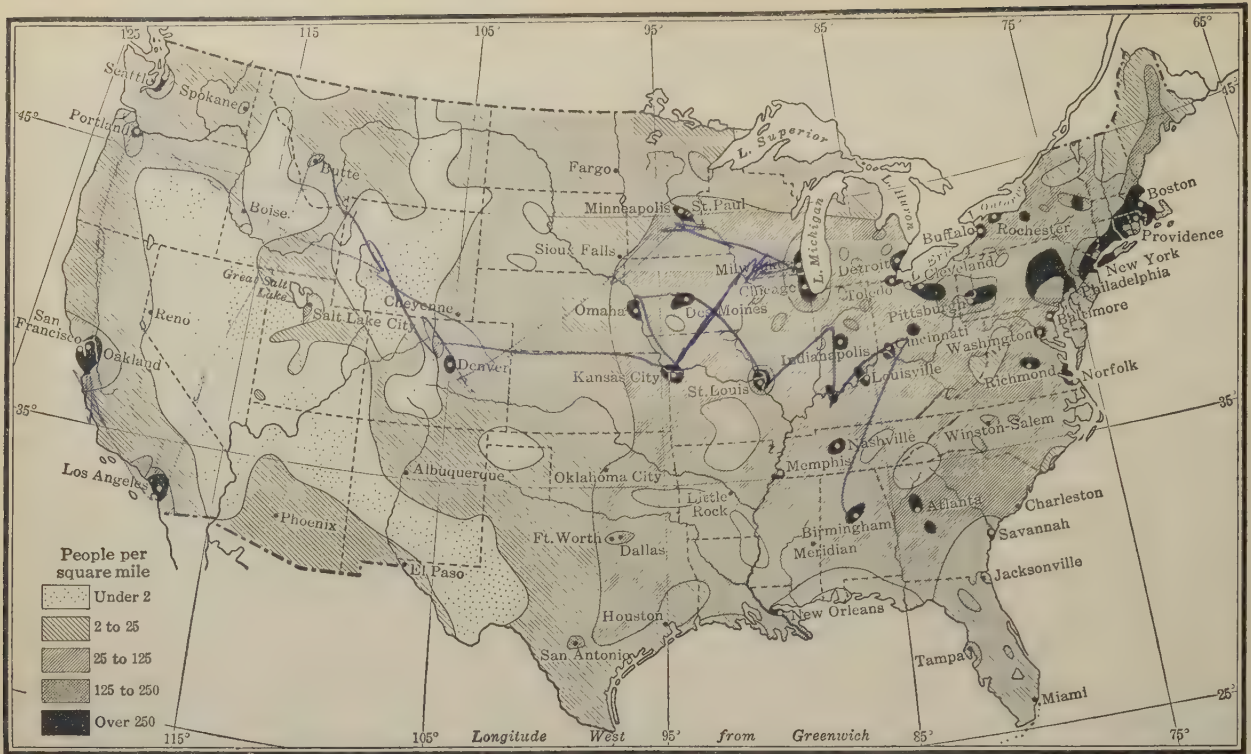


Figure 193. Distribution of people in the United States.

### A REVIEW OF THE UNITED STATES

**A map test.** On an outline map of the United States print these names in the correct places:

|                |                    |
|----------------|--------------------|
| Atlantic Ocean | Great Salt Lake    |
| Pacific Ocean  | Mississippi River  |
| Gulf of Mexico | Ohio River         |
| Lake Superior  | Missouri River     |
| Lake Michigan  | St. Lawrence River |
| Lake Huron     | Columbia River     |
| Lake Erie      | Colorado River     |
| Lake Ontario   | Rio Grande         |

When you have finished, check your map by the map on pages 10–11 to make sure that it is correct in every way.

**A state test.** Make a tracing of the map of the United States on page 315. Then print the name of each state in the right place. You should do this work from memory.

When you have finished, check your map by the one on pages 198–199, correcting it if necessary. Repeat this test every few days until you can name every state correctly.

**Some things to explain.** 1. Figure 193 shows clearly the most densely populated parts of the United States. Explain why there are more people in the eastern half of the United States than in the western half.

2. Explain why so many people live in each of the following sections: (1) along the Atlantic coast from Boston to Philadelphia; (2) in eastern Pennsylvania; (3) from western Pennsylvania to the western end of Lake Erie; (4) along the southwestern shore of Lake Michigan; (5) around San Francisco Bay; (6) in southern California.

**Finding cities.** Name each of these cities and locate it on Figure 193:

1. The largest city of the United States.
2. The capital of the United States.
3. The largest city and leading seaport of New England.
4. The greatest iron-and-steel center of the United States.
5. The seaport and largest city of Pennsylvania.



6. The great lake port at the eastern end of Lake Erie.

7. The largest city and leading seaport of the South.

8. The great city at the junction of the Missouri and Mississippi rivers.

9. The seaport and largest city of Maryland.

10. The leading automobile-manufacturing city.

11. The second largest city of the United States.

12. The great iron-and-steel center on Lake Erie.

13. The largest city and leading seaport of the Northwest.

14. A great business center which is the capital of Indiana.

15. The largest city of the West.

16. The iron-and-steel center of the South.

17. The largest city of Wisconsin, on Lake Michigan.

18. A great business center which is the third largest city of the South.

19. The "Twin Cities" of Minnesota.

20. The largest city of the Ohio valley.

21. The great cotton market in Tennessee.

22. The capital and largest city of Virginia.

23. The great city on San Francisco Bay.

24. The seaport and largest city of Oregon.

25. The lake port at the western end of Lake Erie.

26. The great city at the junction of the Kansas and Missouri rivers.

27. The largest city on the eastern margin of the Rocky Mountains.

28. The business center of northern Texas.

29. The largest city of the Great Basin.

30. The railroad center and largest city of Nebraska.

31. The city at the Falls of the Ohio.

**A farming test.** Imagine that you are starting on an airplane trip following the Mississippi River from its source to its mouth. Use Figure 196 on page 201 to trace your route. Describe your trip by giving the right words to fill the blanks in the paragraphs below :

1. During the first part of our trip we are flying over the agricultural region known as the --- and ----- belt. In this belt ----- are

the most important kind of live stock on the farms. The farmers raise much --- and ---- to feed their cows, and they sell much ---- and -----.

2. The next farming region which we cross is the ---- belt. Here the leading crop is ----. The farmers use most of their ---- to feed and fatten live stock, and they sell large numbers of ---- and ---- ----- to meat-packing plants in the cities.

3. South of the corn belt we cross the ---- and ----- belt. The farmers in this belt raise much ---- to feed and fatten ----- as the corn-belt farmers do. They also raise much ----- as a money crop. In the eastern part of this belt ----- is an important money crop.

4. For a long distance south of Illinois we are flying over the ----- belt, where more than half the world's ----- is raised. The farmers in this belt also raise much ----, and keep different kinds of -----.

5. In the southern part of Louisiana we leave the ----- belt and fly over lands where much ----- and ---- are raised. If we should fly eastward over Florida, we should see many groves of ----- fruit trees.

6. On our trip we have not flown over the greatest wheat lands because they are farther ---- in the drier part of the ----- plains.

7. If we wish to see the greatest truck-farming sections of the country, we must fly along the ----- Plain bordering the ----- Ocean.

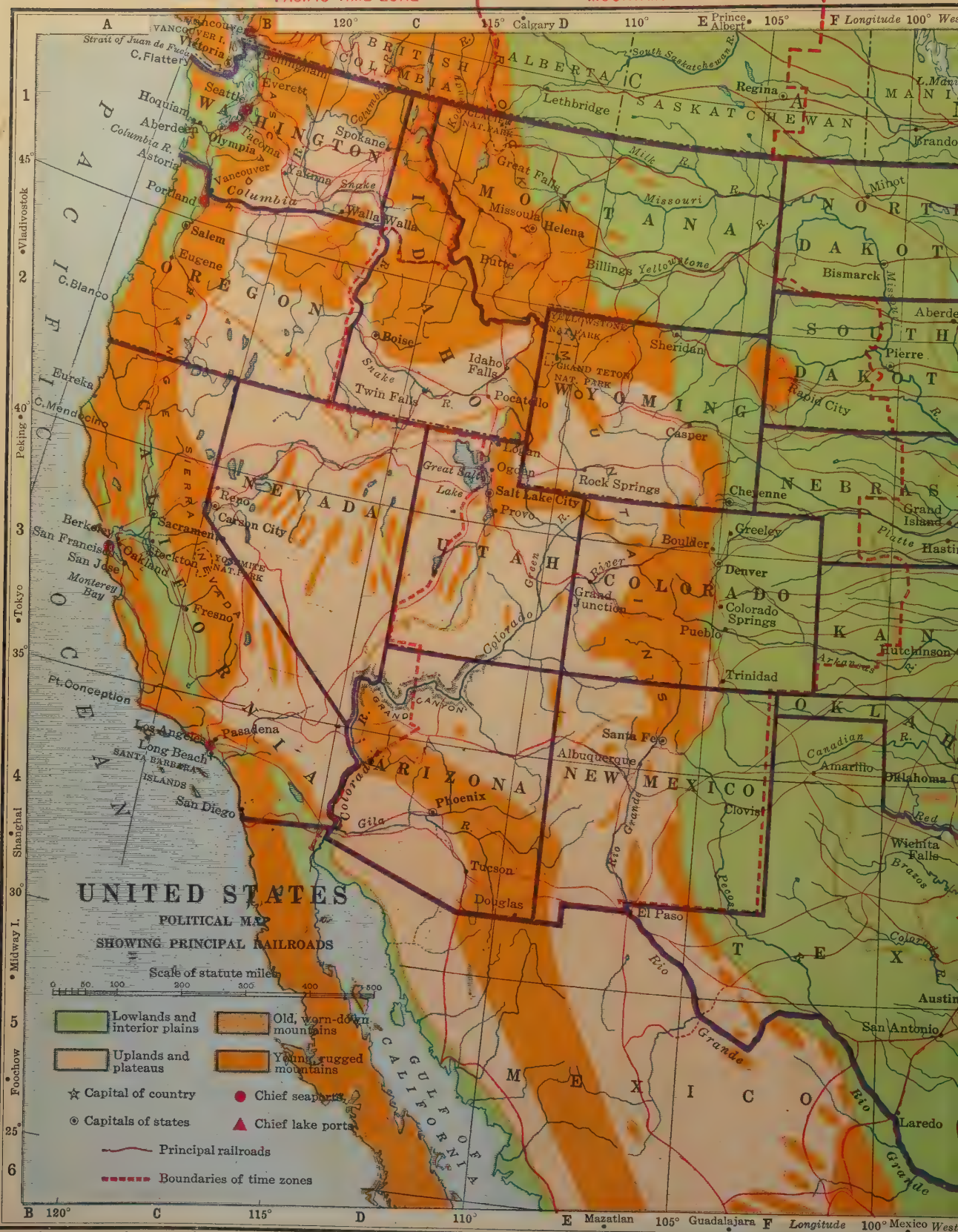
8. If we wish to see the greatest fruit-growing section of the country, we must fly over the Western state of -----.

9. If we wish to see the wheat lands of the West, we must fly over the ----- Plateau.

**Mapping mineral products.** Make a tracing of the regional map on page 316. Then, with the help of the economic maps of the state groups, print the names of the most important mineral products in the different regions.

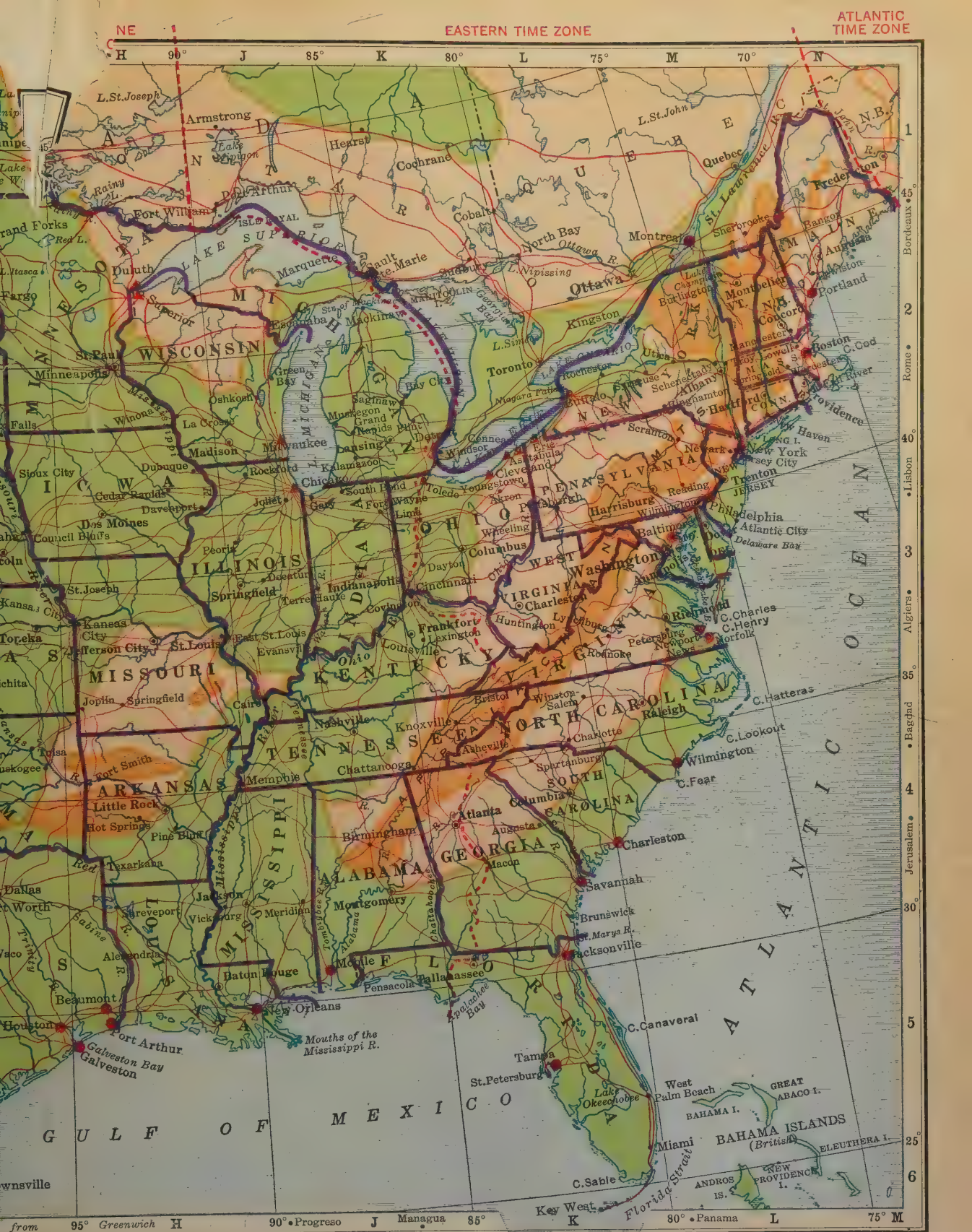
When you have finished your map, make a list of the regions which lead in the production of metal ores, and another of the regions which lead in the production of fuels.

*Turn over to page 202.*





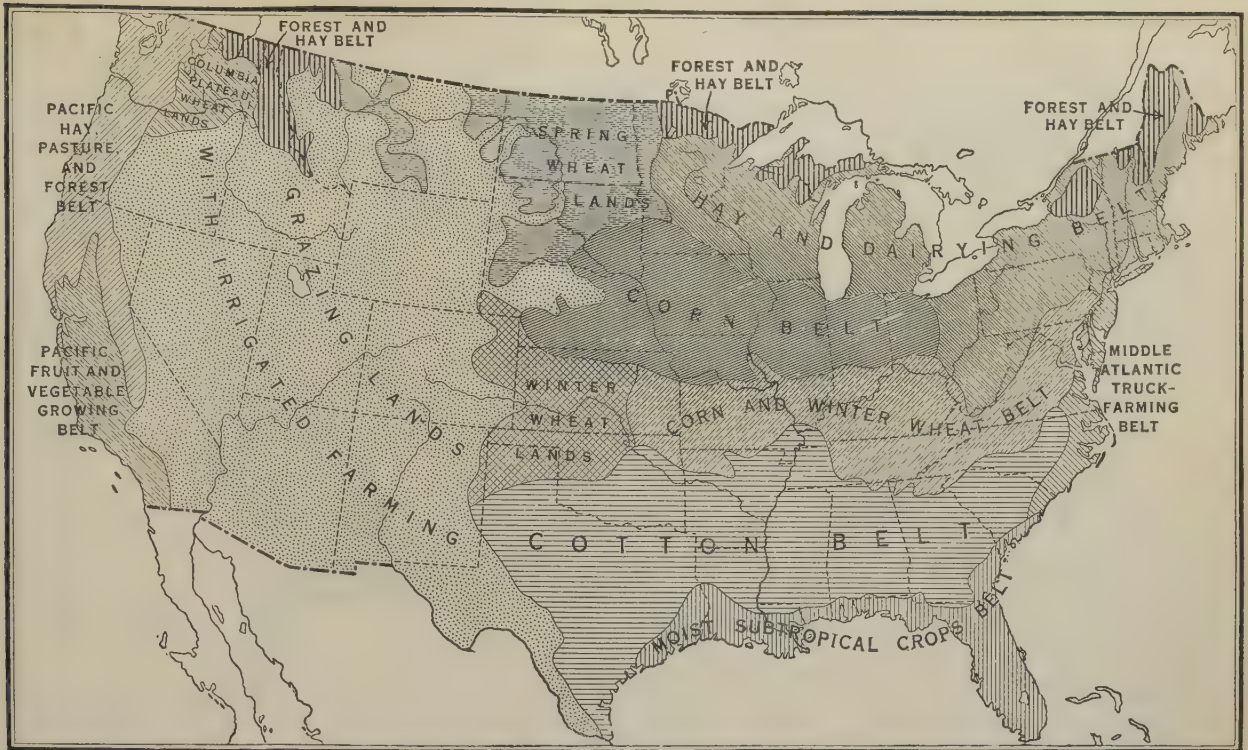
H 90° J 85° K 80° L 75° M 70°











Adapted from map by O. E. Baker of U. S. Bureau of Agricultural Economics

Figure 196. Agricultural regions of the United States.

**Explanation of Figure 194.** Figure 194 shows the differences in rainfall in different parts of the United States. The explanation shows that rainfall is measured in inches. It will help you to understand what "inches of rain" means if you measure the rain that falls during a heavy storm yourself. To do this all you need is a dish with straight sides. Put it out of doors when the rain begins and leave it there until the rain is over. Then measure the depth of the water in the dish, and you will know how much rain has fallen.

The different shades of gray on Figure 194 show about how many inches of rain fall *each year* in different parts of the United States. Places that have less than 20 inches of rain are too dry for most crops, and places with less than 10 inches are too dry for any farming unless the crops can be watered from wells or streams. Keep these facts in mind, for they help to explain many interesting things about agriculture in the United States.

Find your own state on Figure 194, and tell how much rainfall it has.

**Explanation of Figure 195.** The growing season is the *frostless season*, or the length of time between the last frost that is heavy enough to kill crops in the spring and the first frost that is heavy enough to kill them in the fall. The different shades of gray on Figure 195 show the length of growing season in different parts of the United States. What parts of the country have the longest growing season? What parts have the shortest growing season?

In general, the growing season is longest in the south and grows shorter toward the north. You will understand this when you remember that the southern part of the United States is the part nearest the equator. But the shortest growing season is in the high mountains of the West. If you have ever climbed a mountain, you know that the higher you go, the cooler it is. Highlands are always cooler than the bordering lowlands, and so they have a shorter growing season than lowlands the same distance from the equator.

Find your own state on Figure 195, and tell how long its growing season is.

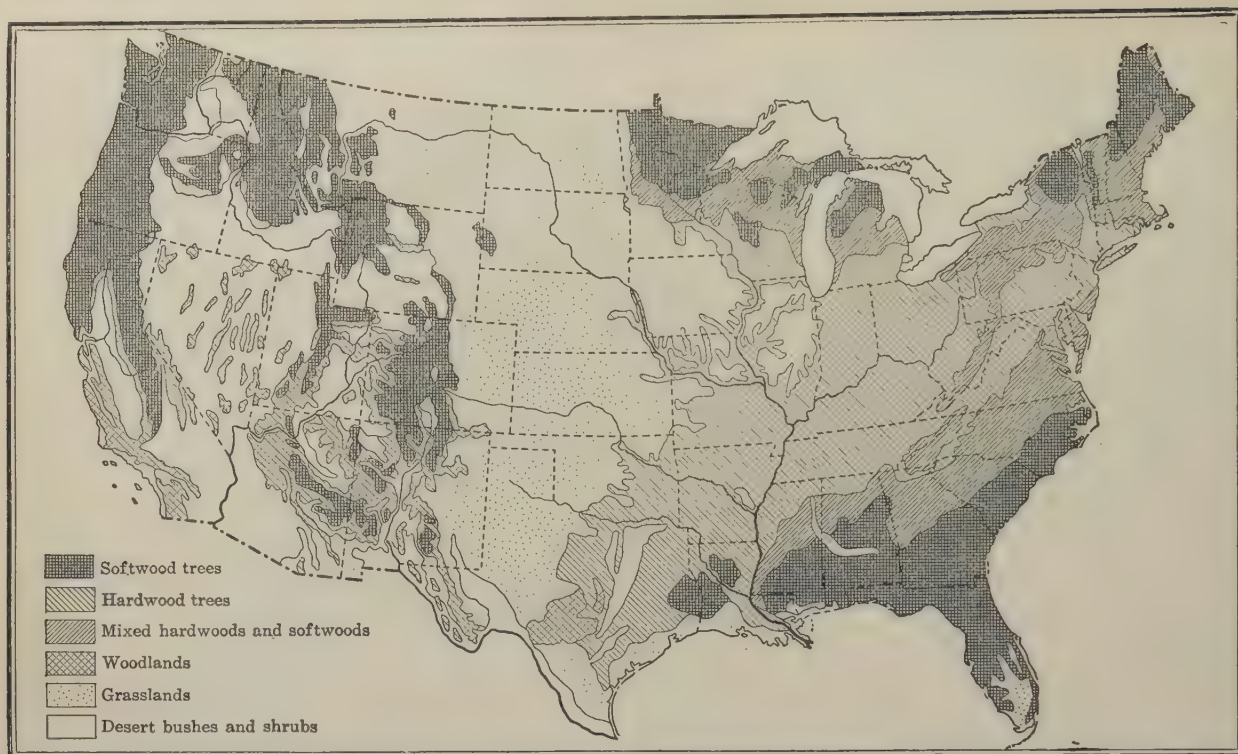


Figure 197. Distribution of forests in the United States.

**A lumbering test.** Below is a list of the states each of which produced over a billion (100 million) board feet of lumber in a recent year. The figure after each one shows how many billions of board feet of lumber were cut. On an outline map of the United States draw seven little squares like this  $\square$  in Washington, four in Oregon, and so on, to show how much lumber was cut in each state.

|               |              |                  |
|---------------|--------------|------------------|
| Washington 7  | California 2 | Wisconsin 1      |
| Oregon 4      | Arkansas 1   | Florida 1        |
| Louisiana 3   | Texas 1      | North Carolina 1 |
| Mississippi 3 | Georgia 1    |                  |
| Alabama 2     | Idaho 1      |                  |

When you have finished your map, compare it with Figure 197, and complete the following sentences :

1. The two great lumbering regions are in the mountains of the N\_\_\_\_w\_\_\_\_ and on the Coastal Plain of the S\_\_\_\_.

2. The forests of both these regions are made up mostly of \_\_\_\_\_ trees.

3. More softwoods than hardwoods are cut by lumbermen because \_\_\_\_\_.

**A summary test.** Each blank in the sentences below is to be filled with one of these words: eastern, western, central, southern. Write the sentences, filling the blanks correctly.

1. The \_\_\_\_\_ half of the United States is much more densely settled than the \_\_\_\_\_ half.

2. The highest mountains are in the \_\_\_\_\_ part of the country.

3. The greatest plains are in the \_\_\_\_\_ and \_\_\_\_\_ parts.

4. The leading farming regions are in the \_\_\_\_\_ and \_\_\_\_\_ parts of the United States.

5. The greatest stretches of grazing lands are in the \_\_\_\_\_ part of the country.

6. The irrigated farms are mostly in the \_\_\_\_\_ part of the country.

7. The most important lumbering regions of the country are in the \_\_\_\_\_ and \_\_\_\_\_ parts.

8. The greatest coal-mining districts are in the \_\_\_\_\_ and \_\_\_\_\_ parts of the country.

9. The leading oil fields are in the \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ parts.

10. The leading manufacturing sections are in the \_\_\_\_\_ and \_\_\_\_\_ parts of the country.



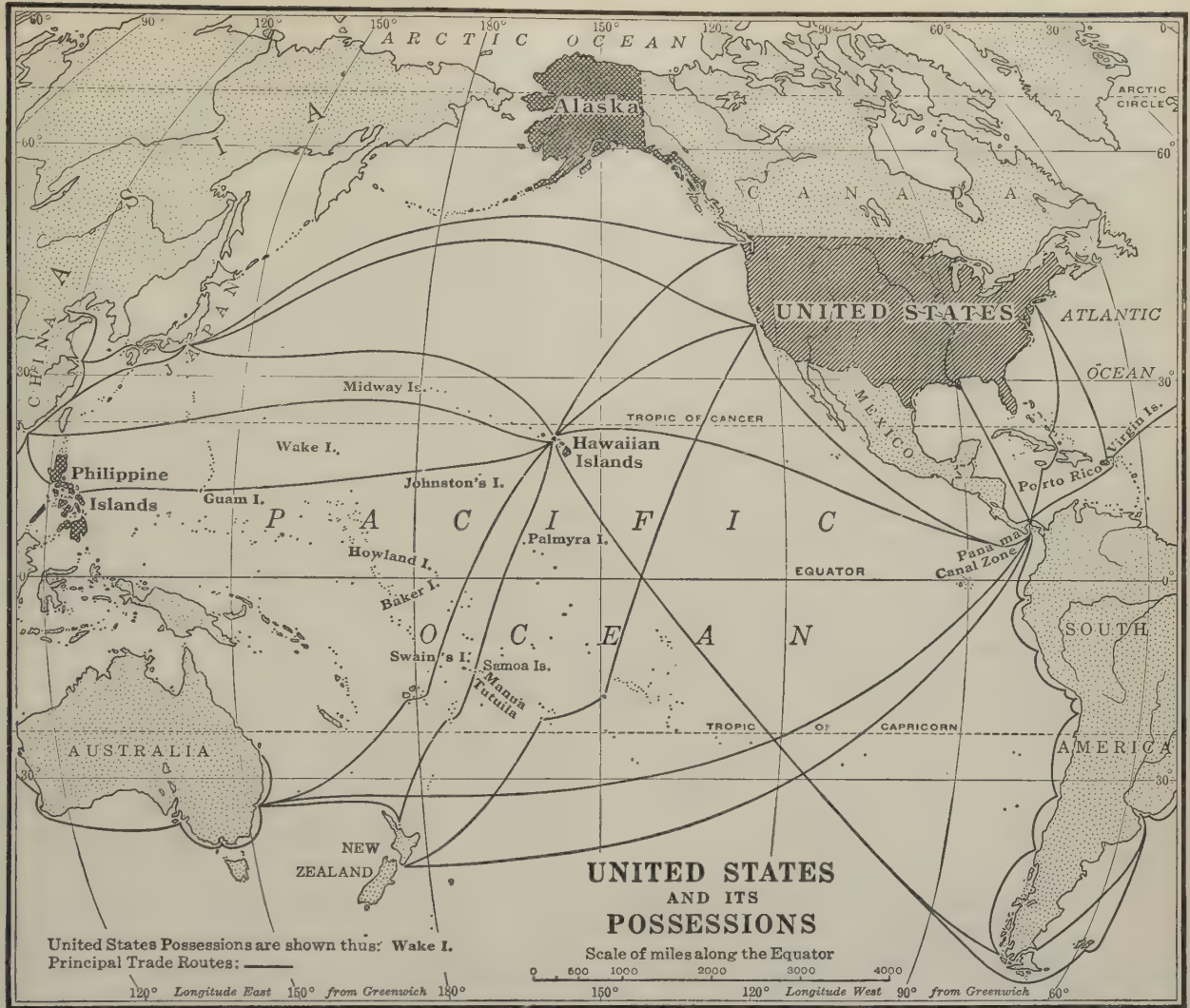


Figure 198. The United States and the lands which it governs.

## VII. POSSESSIONS OF THE UNITED STATES

**Foreword.** The possessions of the United States are the lands which it governs in other parts of North America and in distant parts of the world. The most important possessions are Alaska, the Hawaiian Islands, the Philippine Islands, Porto Rico, and the Panama Canal Zone. Find these lands on Figure 198.

As you read this chapter try to find answers to this question: Of what value to the United States are its possessions?

## 1. ALASKA

In 1867 the United States bought Alaska from Russia for \$7,200,000, and many people thought that it cost too much. Since then products worth hundreds of millions of dollars have come to the United States from Alaska. Do you think the purchase was worth while?

Alaska is not a state, but a territory of the United States. It is more than twice as large as Texas, but Texas has about one hundred times as many people. As you read this section, find reasons why Alaska is so thinly settled.



U. S. Bureau of Fisheries

Figure 199. Catching salmon in Alaska. The picture shows part of the big purse seine, or net, which catches large numbers of salmon at a time. The fishermen are taking the salmon out of the seine and putting them in their boat, ready to go to a cannery.

**The Pacific coast of Alaska.** The map on page 251 shows that the Pacific coast of Alaska is bordered by rugged mountains which are a northern extension of the Cascade Range and the Coast Ranges of our Pacific states and Canada. Find the narrow strip of coast land that stretches southeastward from the main peninsula of Alaska. This is called southeastern Alaska.

The Pacific coast of Alaska is so beautiful that many tourists visit it each summer. They travel by boat through an "inside passage" between the islands and the coast, and the sights that they see are like those along the coast of Norway, — long, narrow fiords leading far into the land, snow-capped mountains, waterfalls, and glaciers.

The westerly winds bring much rain to the Pacific coast of Alaska, and make it much warmer than you would expect for a region so far north. On the map on page 306 find the Japan Current. This is the warm current of the north Pacific Ocean just as

the Gulf Stream is the warm current of the north Atlantic. As it crosses the Pacific, it spreads out and becomes the West Wind Drift. The westerly winds, blowing over the warm waters of the "drift," bring so much warmth to the Pacific coast of Alaska that the winter weather is seldom bitterly cold, and the harbors are never closed by ice.

**Fisheries and mines.** In traveling along the Pacific coast of Alaska you will notice two things particularly, — the salmon canneries and the mines, — and you will soon see that the people make their living chiefly by fishing and mining. *See Figure 199.*

From late spring until early fall the Alaskan fishermen catch

large numbers of salmon as the fish swim in from the sea and start up the streams to lay their eggs. Most of the salmon are caught for the canneries, and millions of dollars' worth of canned salmon are shipped to the United States each year. Alaskan fishermen also catch halibut, cod, and herring, but the salmon fisheries are by far the most important.

Like many other regions of young, rugged mountains, the Pacific coast of Alaska is rich in metal ores. Find Alaska on the map on pages 220–221 and name two kinds of metals that are mined there. Southeastern Alaska is the section where the most gold is mined, while the largest copper mines are in the mountains of the main peninsula. Next to salmon, copper and gold are the most valuable exports of Alaska. *See Figure 200.*

Coal is also plentiful in the Pacific region of the main peninsula, but it is mined in only a few places. There are not enough people in Alaska to need much coal, and as yet few of the coal fields are reached by railroads.





Courtesy of Canadian National Railways

**Figure 200.** Part of Juneau, the capital of Alaska. On the steep hillside are the buildings of a gold mine. The little boats nearest you are fishing boats, and farther

away is a freight and passenger ship. The smoke that you see comes from a lumber mill. How many different kinds of work does this picture suggest to you?

**Farms and forests.** The climate of the Pacific coast region is too cool and moist for grain to ripen, but it is well suited to the growth of grass, vegetables, and berries. Most of the land is too rough for farming, but there is a little dairying and vegetable-growing. For most of their food the people depend on imports from the United States.

Along much of the Pacific coast there are splendid forests of spruce, hemlock, and other evergreen trees. Some day these forests will produce much pulp wood, but at present lumbering is carried on chiefly to supply the people with building material and the salmon canneries with wooden packing cases.

**Towns and trade.** About three fifths of the people of Alaska live in towns and villages scattered along the Pacific coast from Cook Inlet on the west to Dixon Entrance on the

south. Even so, the region is not thickly settled because it is so mountainous.

The most important towns are seaports, but they are all small. Juneau, the capital and largest town of Alaska, has about 4000 people, and Seward, at the southern end of the main railroad of Alaska, has less than a thousand. All the seaports export products of the mines and fisheries to the United States, and import food and manufactured goods.

**The Yukon Plateau.** From Seward you can travel inland by train to Fairbanks on the Yukon Plateau. Fairbanks is the largest town in the interior of Alaska, yet it has only about a thousand people. This fact alone shows that the Yukon Plateau is very thinly settled. Find the plateau on the map on pages 220–221. What great river flows through it to Bering Sea?



By Ewing Galloway, N. Y.

Figure 201. A fine team of Alaskan dogs. Their owner is a fur-trapper, and he is taking a load of pelts to a trading post. The dogs are strong and can pull a heavily loaded sled over the snow.

Although the Yukon Plateau can be reached by railroad from the south, the Yukon River is the main highway of travel and transportation east and west through the region. In the summer, boats carrying passengers and freight go upstream as far as Whitehorse in the Yukon Territory of Canada. Coming back, they often bring gold ore and furs, which are the principal products of the plateau. Figure 201 shows how transportation is carried on in winter.

**Climate and farming in the plateau.** The Yukon Plateau is hilly and rolling, and the yearly rainfall is rather light. Grasses, mosses, and flowers grow on the uplands in summer, but forests are found only on the lower lands along the main streams. The winters are long and cold. The summers are short, but the summer days are surprisingly warm for a land so far north.

There is some good farming land on the plateau, but as yet very little of it is used because there are so few people in the region. The frostless season is short, but crops grow fast because the sun shines from eighteen to twenty hours a day during the summer. For this reason spring wheat, oats, rye, and barley will ripen, and many vegetables grow

well. The principal farming district is in the valley of the Tanana River, between Fairbanks and Tanana.

**Placer mining.** Gold has been found in the stream gravels of the Yukon River and its tributaries, and placer mining is carried on in many places. There is also much gold in the Seward Peninsula bordering Bering Sea.

**Alaskan furs.** In the Yukon Plateau there are large numbers of wild animals such as foxes, muskrats, and beavers, which are valuable for their pelts, or fur-

covered skins. Many of the people of the region are Indians who get their living chiefly by trapping the fur-bearing animals. The trapping is done in the winter, when the fur of the animals is thickest, and the trappers sell the pelts at trading stations along the Yukon River.

Far off the western coast of Alaska are some small islands where large herds of seals gather in the summer. In years gone by so many of the seals were killed for furs that the herds were almost destroyed. Our government now has charge of herds and allows only a certain number of seals to be killed each year. *See Figure 202.*

On some of the islands along the Pacific coast of Alaska there are farms where foxes and other fur-bearing animals are raised for their pelts. Sealskins, furs from the fur farms, and furs of wild animals caught by trappers are shipped to the United States, and are among the most valuable products of Alaska.

**The Eskimos and their reindeer.** In the part of Alaska bordering Bering Sea and Bering Strait there are many Eskimos. When we bought Alaska, the Eskimos were getting their living by hunting and fishing, just as the Eskimos of Baffin Island do today. Their



life was so hard that our government had reindeer brought from the Old World and taught the Eskimos how to care for them. Today many of the Eskimos are reindeer-herders, and reindeer meat is exported from Nome to Seattle.

**The cold, frozen North.** Turn to page 220 and find the part of Alaska north of the arctic circle. This part is a land of long, cold winters, with summers that are too short and cool for any crops to grow. The Brooks Range is a region of rugged mountains with snow fields and glaciers, — too rugged and cold for any people to live there.

The coastal plain bordering the Arctic Ocean is a cold, treeless region of the kind that we call *tundra*. The only plant growth is moss and grass, for the ground is frozen most of the year, and thaws only a few inches at the surface during the summer. The only people in this cold, frozen region are a few Eskimos who live near Point Barrow. They get their living partly by hunting and fishing and partly by herding reindeer.

**A check.** You should now be able to give two reasons why there are so few people in Alaska. One has to do with the climate and the other with the surface of the land. What are the reasons?

**Alaskan sights.** The phrases below suggest things that you might see in Alaska. Arrange the phrases in two lists, heading one list "Sights along the Pacific coast of Alaska," and the other "Sights in the Yukon Plateau."

Fishermen catching salmon  
Farmers at work in grainfields  
River boats carrying passengers and freight  
Copper mines  
Trappers catching wild animals  
Placer mining for gold  
Salmon canneries  
Lumbermen at work in the forests  
Sleds drawn by dogs  
Freight and passenger ships from the United States



Figure 202. Seals off the coast of Alaska. This is the kind of seal from which the finest sealskin furs are obtained, and the animals are often called fur seals.

## 2. THE HAWAIIAN ISLANDS

The Hawaiian Islands form another territory of the United States. The people of the islands say that they live at the "crossroads of the Pacific." Study the map on page 203, and see if you can tell why. Notice the size of these islands. Compared with Alaska, they are but tiny dots on the map, yet they have about six times as many people.

The larger map on page 210 shows that the Hawaiian Islands are mostly mountainous. Judging from the products and the exports, what do you think is the principal kind of work on the islands? Does this not surprise you?

**How the islands were made.** The Hawaiian Islands are the tops of volcanic peaks which have been built up from the sea bottom by outpourings of lava from deep within the earth. On Hawaii, the largest island in the group, the mountain tops are more than two miles above the sea. Mauna Loa is an active volcano, and from time to time hot lava boils up in it and overflows down the mountain side. Find this mountain on the map on page 210 (*F4*).

**Fertile soils and tropical climate.** When you were studying about the Columbia Plateau, you learned that soils made from the



Figure 203. Loading the sugar cane in Hawaii. Iron tracks for small railroad cars are laid in the cane fields. Loading machines load the cane into the cars, and a small engine hauls the cars to the sugar mill.

decay of lava are fertile. Good soils, then, are one reason why farming is the most important work in the Hawaiian Islands.

Another reason is the climate. Turn to the map on page 203 again, and notice that the islands are south of the tropic of Cancer, in the torrid zone. For this reason the weather is warm the year round, but it is not so hot as in many tropical lands because of the cooling ocean breezes.

The winds that blow toward the islands are the *northeast trade winds*, which are shown on Figure 150 on page 156. Because of these winds, the northeastern slopes of the islands are very rainy, while the southwestern slopes are much drier. Explain why this is true.

**Sugar plantations.** Although the islands are mountainous, there are many stretches of land level enough for farming in the valleys and along the coasts. The warm climate and fertile soil are well suited to sugar cane, and this has become by far the most important crop. Since the cane needs much water while it is growing, the plantations in the drier parts of the islands are irrigated. After one crop of cane has been cut, another grows in its place, and the fields do not have to be replanted for several years. See Figure 203.

Sugar mills have been built in many parts of the islands, and the preparation of raw sugar from the cane is the most important kind of manufacturing. Nearly all the raw sugar is exported to the United States.

**Other crops.** Next to sugar cane, tropical fruits are the most valuable crops in the islands, and pineapples hold the first place. See Figure 204.

Other crops of much less importance are bananas, coffee, and rice. The rice is grown chiefly to feed the plantation workers.

**Climate and population.** It is largely because of the climate that so many people can make their living in the Hawaiian Islands. Farming can be carried on the year round, and so there is always work for large numbers of people on the plantations.

The native Hawaiians are people of the brown race, but they make up less than one tenth of the population. Many of the plantation owners and most of the business men are Americans, but the plantation workers are largely Japanese, Chinese, and Filipinos from Asia, and Portuguese from Europe. Why is it natural for people from many lands to come together at the "crossroads of the Pacific"?



Figure 204. Packing Hawaiian pineapples in tins in a canning factory. Large quantities of canned pineapples are shipped to the United States each year.





Courtesy of Hawaii Tourist Bureau

Figure 205. Ocean liners in the harbor of Honolulu. The boat at the left is on its way around the world, and from Honolulu it is going to Japan, and then to

China. Trace its route on Figure 198. The boat at the right makes trips back and forth between San Francisco and Honolulu. Trace its route on Figure 198.

**Trade at the crossroads.** Honolulu, the capital and chief seaport of the Hawaiian Islands, is on the island of Oahu, and is a large city with many hotels, stores, business blocks, and beautiful homes. It has a large, safe harbor, and at its wharves you will see ships from many lands. See Figure 205.

Turn to the map on page 210, and prove by the imports of Honolulu that the Hawaiian people carry on trade with every continent bordering the Pacific Ocean. Can you give a good reason for this? By far the largest amount of trade, however, is with the United States. What does the map tell about our trade with the Hawaiian Islands?

**An ocean stopping place.** The map on page 203 shows that many of the trade routes between the countries bordering the Pacific Ocean meet and cross at the Hawaiian Islands. Because of the location of the islands, Honolulu is an ocean stopping place where ships may put in to take on more coal or oil, or to be repaired on their long trips across the Pacific Ocean. At Pearl Harbor, near Honolulu, our government has a *naval station*, where ships of the United States navy are repaired and supplied with fuel.

**Giving reasons.** Give as many reasons as you can to explain why

1. The Hawaiian Islands are called the "crossroads of the Pacific."
2. The soils of the islands are fertile.
3. The weather is warm the year round.
4. The northeastern sides of the islands have more rain than the southwestern sides.
5. Sugar cane is the leading crop.

### 3. THE PHILIPPINE ISLANDS

In 1898 the United States paid Spain \$20,000,000 to give up all claim to the Philippine Islands, and since then the islands have been under our control. Find the Philippines on the map on page 203. How do they compare in size with the Hawaiian Islands? Near what continent are they? Like the Hawaiian Islands, their surface is mountainous, their climate is tropical, and farming is the principal work of the people. Can you name any products of the Philippines that are shipped to the United States?

**The land and its use.** The Philippine Islands are the summits of mountain ranges which rise above the surface of the sea. Some of the mountains are volcanic peaks, with rich lava soils on their lower slopes. As a

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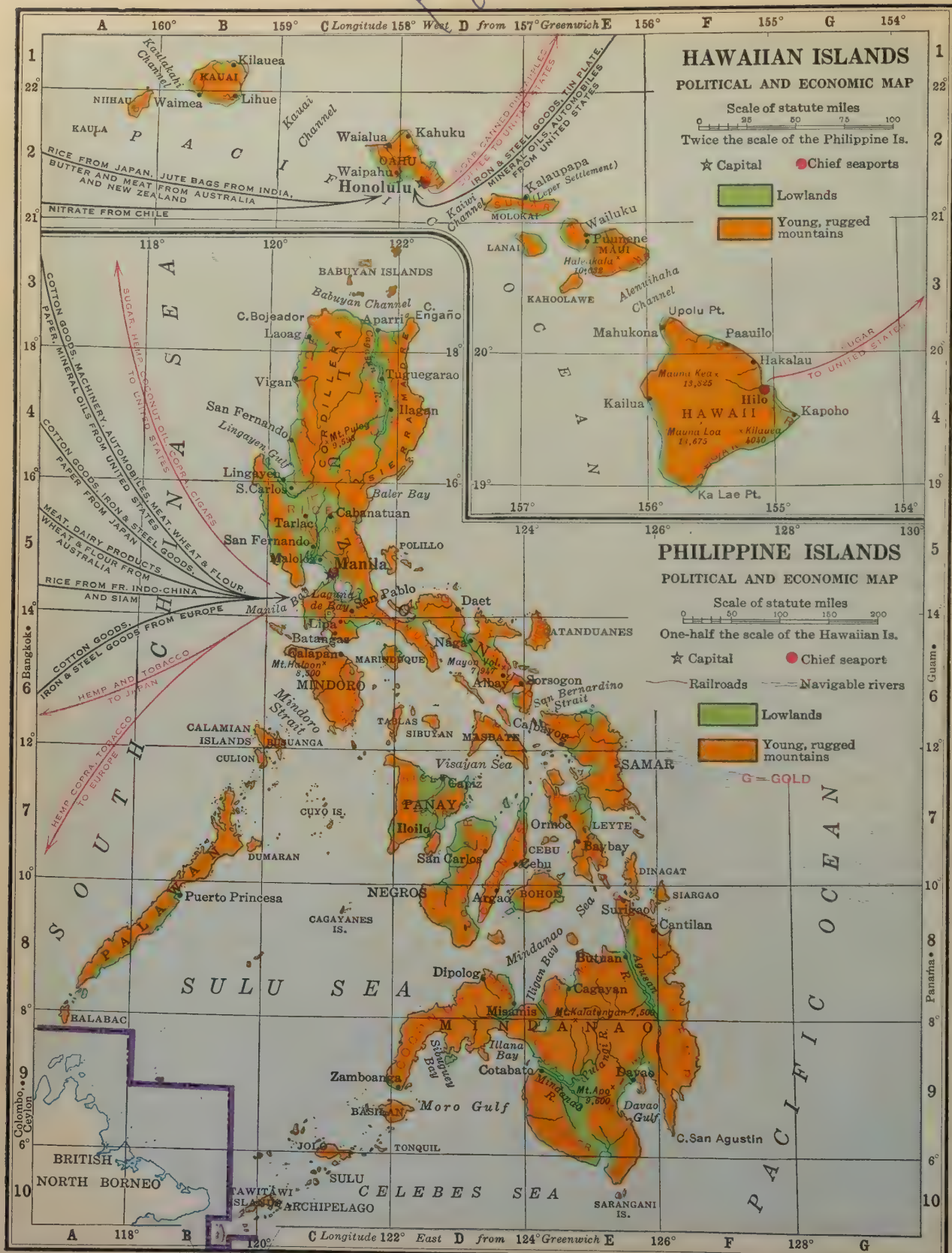






Figure 206. Native houses in the Philippines. The walls of these houses are usually of woven bamboo, the roofs are of palm leaves sewed to rafters of rattan, and the floors are made of strips of bamboo.

whole, the islands are rainy and well forested. Some parts are tropical *jungles*, where the trees are so close together and the underbrush is so thick that it is hard to make roads, or even paths. Among the trees there are palms, bamboos, and rattans which the native people use in building houses such as you see in Figure 206. There are also many hardwood trees which provide wood for building, making furniture, and other purposes.

In the valleys and along the coasts there are many stretches of level land with fertile soils. It is in these lowlands that most of the people live and most of the crops are raised.

**A great food crop.** Most of the people of the islands are native Filipinos, whose principal food is rice. More land is used for rice than for any other crop, and it is grown on steplike terraces on the mountain sides as well as on the level lands in the lowlands.

Since rice needs to be under water part of the time while it is growing, dikes are built around the fields so that they can be flooded and drained at the proper times. In May you will see the Filipino farmers plowing the muddy fields with the help of carabaos, or

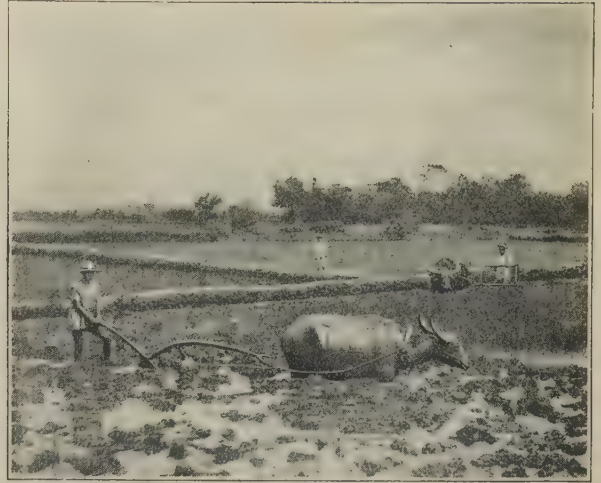


Figure 207. Plowing with carabaos. These animals do not mind working in mud and water, and so they are very valuable in the rice fields. They also draw heavy loads of hemp, copra, and other products.

water buffaloes. These are the principal work animals of the islands. See Figure 207.

About three weeks after the seeds are sown you will see men, women, and children wading about in the flooded fields, transplanting the young rice plants. In November you will find them cutting the grain with sharp knives. Many of the farmers own small rice fields. Others work on rice plantations and receive a share of the rice as their pay.

Other crops which the Filipinos raise for food are corn, vegetables, and different kinds of tropical fruits.

**Crops for export.** The chief crops that are raised for export are sugar cane, abaca (manila hemp), coconuts, and tobacco. The cane fields and sugar mills will remind you of the Hawaiian Islands. Raw sugar is exported to refineries in the United States.

The abaca plants look like banana plants. They are raised for their fibers, which make the best kind of hemp for the manufacture of rope. Abaca fiber is called manila hemp because it is exported from Manila.

Each year the full-grown abaca plants are cut down, and the sheathlike layers of the

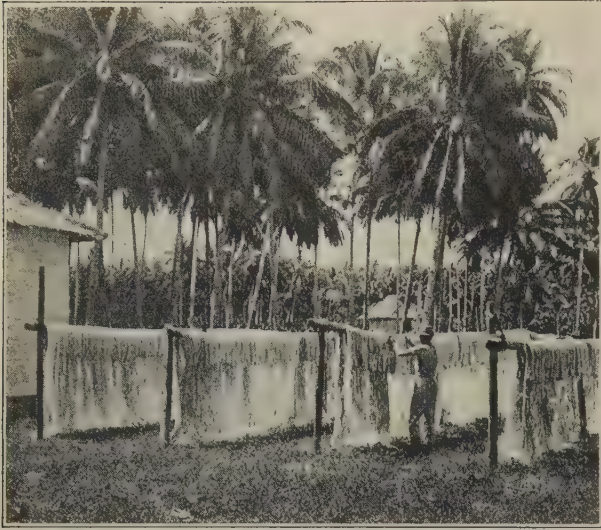


Figure 208. Hemp fiber drying in the sun. In many places in the Philippines this fiber may be seen hanging out to dry like washing. When it is dry, it is like coarse, silvery-white hair.

main stalks are stripped off. The sheaths are then scraped with a knife to remove all the pulpy part, and the coarse fibers that remain are washed, dried, and made up into bales for export. See *Figure 208*.

Coconut palms grow in large numbers on the coastal lowlands. The Filipinos gather the coconuts, cut them open, and dry the white "meat" to make copra. On several of the islands there are mills where the copra is pressed to squeeze out the coconut oil. Both copra and coconut oil are exported to Europe and the United States, where the oil is used in the manufacture of soap and in making substitutes for butter and lard.

On several of the islands you will see tobacco plantations. Much tobacco is exported, and much is used in the manufacture of cigars and cigarettes. Cigars are among the exports to the United States.

**Manila and its trade.** Turn to the map on page 210 and find the city of Manila on the island of Luzon (C5). This is the capital, the largest city, and the chief seaport of the Philippines. See *Figure 209*.

The harbor of Manila is a busy place. Boats from the other islands come and go, bringing in products for export and carrying back supplies for the people. Freighters and passenger ships arrive with cargoes of goods from distant lands, and sail away loaded with products of the Philippine plantations. From the map on page 210 name the things that you might see being unloaded from ships from the United States. With what countries on the western side of the Pacific Ocean do the people of the Philippines trade?

*Some sights to explain.* Explain why you might expect to see each of the following things in Manila:

Tobacco factories  
Oil mills  
Rice mills  
Soap factories

Rope factories  
Furniture factories  
Ship-repairing yards  
Storage warehouses

*A newspaper item.* Can you complete the following paragraph by giving the correct words to fill the blank spaces? It was copied from a Manila newspaper.

"The liner *President Madison* pulled out of Pier No. 5 yesterday afternoon for Seattle. The liner, in addition to passengers, is carrying 5119 bales of h\_\_\_\_, 900 sacks of refined s\_\_\_\_, and 277 cases of c\_\_\_\_s."



Figure 209. Native boats on a canal in Manila. These boats carry freight from ocean steamers in the harbor to warehouses and factories in the city.



#### 4. THE PANAMA CANAL ZONE

Suppose you are in Honolulu and wish to travel all the way to New York City by boat. Years ago you would have had to go around the southern end of South America, a distance of about 15,600 miles. Today there is another route, which is only half as long. Do you know how ships reach the Atlantic Ocean from the Pacific by this shorter route?

**Connecting two oceans.** Turn to the map on page 251 and find the Isthmus of Panama (M9). What two continents does it join? In what zone of the earth is it? Is this isthmus mountainous or level?

Many years ago a company of French engineers started to dig a canal through the Isthmus of Panama to connect the Atlantic and Pacific oceans. They failed because terrible fevers broke out among the workmen. The fevers were due to the bites of mosquitoes which swarmed in the hot, moist isthmus.

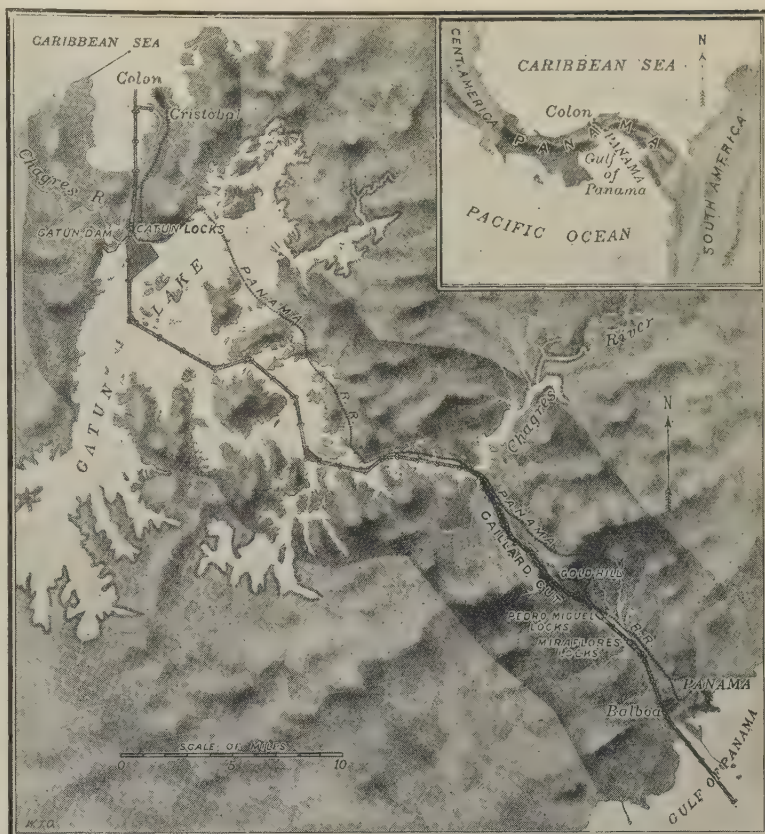
Later the United States Government took up the work, first buying a strip of land five miles wide on either side of the route of the canal. This strip of land is known as the Canal Zone. The first thing that our government did was to get rid of the mosquitoes, so that the zone would be a safe place in which to live and work. It was a long, hard task to cut a canal deep enough for ocean ships through the mountainous isthmus, and it took ten years to do it. It was well worth doing, for it made a direct connection between the two greatest oceans of the earth. See Figure 210.

**Through the canal.** Coming from Honolulu, your ship enters the Pacific end of the canal at Balboa. A few miles from the en-

trance it is lifted 85 feet in locks such as you saw in the Soo Canal. Moving out of the locks at the higher level, it steams slowly through the canal. Near the Atlantic end your ship is let down to sea level again by another set of locks, and you sail out into the Caribbean Sea. See Figure 211.

**Work in the Canal Zone.** There is also a railroad across the isthmus, connecting Colon on the Atlantic side with Balboa and Panama on the Pacific side. Colon and Panama are ports of the country of Panama, but Balboa and a part of Colon known as Cristobal belong to the United States.

The work of nearly all the people who live in the Canal Zone is connected in some way with the canal or the railroad. At Balboa



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Figure 210. A map of the Panama Canal Zone. The Canal Zone, shown in the darker shading, belongs to the United States, and the land on either side belongs to the country of Panama. The canal is the dark line running from the Gulf of Panama to the Caribbean Sea.



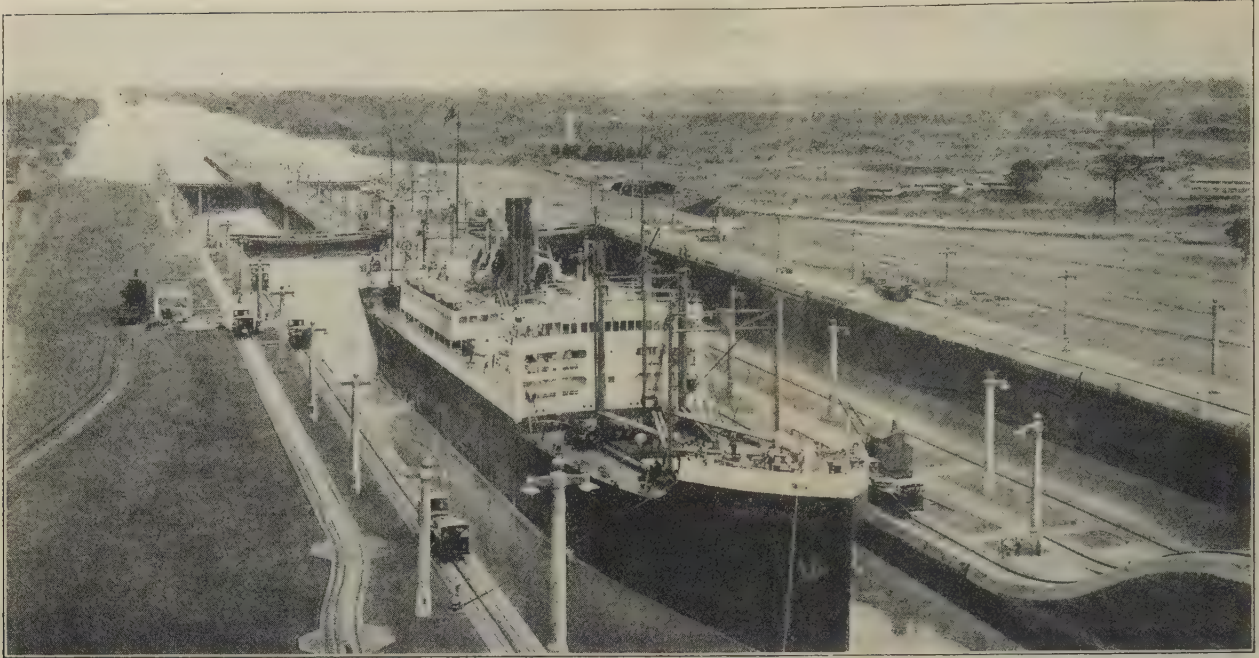


Figure 211. An ocean liner passing through the Gatun Locks in the Panama Canal. The ships are towed through the locks by the electric engines that you see

in the picture. The canal is only fifty miles long, but the trip through it often takes most of a day because each ship must wait its turn to go through the locks.

and Cristobal our government has fueling stations, where ships can take on coal or oil, and at Balboa there are railroad repair shops and ship-repairing yards.

*Comparing distances.* Below are three problems in subtraction. The answer to each one will help you to understand how sailing distances for ships have been shortened by the building of the Panama Canal.

#### SAILING DISTANCES

##### 1. From San Francisco to New York

|                              |                    |
|------------------------------|--------------------|
| Around South America . . . . | 15,403 miles       |
| Through Panama Canal . . . . | <u>6,062</u> miles |
| Distance saved . . . . .     | ----- miles        |

##### 2. From Honolulu to New Orleans

|                              |                    |
|------------------------------|--------------------|
| Around South America . . . . | 15,942 miles       |
| Through Panama Canal . . . . | <u>7,051</u> miles |
| Distance saved . . . . .     | ----- miles        |

##### 3. From Seattle to Liverpool, England

|                              |                     |
|------------------------------|---------------------|
| Around South America . . . . | 16,806 miles        |
| Through Panama Canal . . . . | <u>10,014</u> miles |
| Distance saved . . . . .     | ----- miles         |

## 5. PORTO RICO

From the Panama Canal it is a three days' trip across the Caribbean Sea to Porto Rico, an island which the United States obtained from Spain in 1898. Find this possession on the map on pages 240-241 (*L4*). In what zone is it? Study the larger map of Porto Rico in the lower left corner of page 240, and describe the surface of the island. Where are the best farm lands? What kinds of plantations do you expect to see on the island?

**Porto Rican plantations.** Like the Hawaiian Islands, Porto Rico is mountainous, with stretches of level land in the valleys and along the coast. It is a little nearer the equator than the Hawaiian Islands are, and is in the belt of the northeast trade winds. Which side of the island is the rainier side? On the opposite side many of the plantations are irrigated. Can you explain why?

As in the Hawaiian Islands, the leading crop of Porto Rico is sugar cane. The sugar





Courtesy of United Fruit Company

**Figure 212.** Stripping sugar cane. When the cane is ripe, it is cut down with sharp knives. Then the leaves are stripped off, and the stripped cane is sent to a mill.

plantations are mostly on the lowlands bordering the coast, and there are many mills where the cane is crushed and raw sugar is prepared for export.

The next most important crop is tobacco, which is grown chiefly in the valleys and on the hillsides farther inland. Part of the tobacco is raised for export, and part is used to make large quantities of cigars and cigarettes. See *Figures 212 and 213*.

The mountain slopes are well suited to the growth of the coffee plant, and coffee is raised in many parts of the island. The Porto Ricans are great coffee-drinkers, and they use much of the crop themselves. You will learn more about coffee-growing when you visit South America.

As you travel through the island, you will see plantations of bananas and pineapples which will remind you of the Hawaiian Islands, coconut trees which will remind you of the Philippines, and orange and grapefruit groves

which will remind you of Florida. Much fruit is exported to the United States.

On the lowlands many kinds of vegetables are raised. During the winter months fresh vegetables are shipped to New York and other cities on our Atlantic coast.

**San Juan and its trade.** Figure 214 is a picture of San Juan, the capital and largest city of Porto Rico. Find San Juan on the map on page 240. On which side of the island is it? What else does the map tell you about this city?

At the wharves in San Juan you will see ships unloading goods from the United States, and taking on Porto Rican products to carry back. Study the imports of Porto Rico (page 240). Which ones are foods? Which are manufactured goods? Why is most of Porto Rico's trade with the United States?

**The Porto Rican people.** This little island has more than a million and a half people, and is the most densely settled of our possessions. Three fourths of the population are white people. Most of them are of Spanish descent, but some are Americans who have



**Figure 213.** A tobacco plantation in a fertile valley among the mountains in Porto Rico. Where else have you seen tobacco growing under cloth covers? Find some tobacco barns in the picture.



Figure 214. Part of the water front at San Juan. San Juan is the chief seaport of Porto Rico. Its harbor is well protected from storms and is large enough to allow

many ships to anchor at one time. The plantations of sugar, tobacco, and fruit in Porto Rico furnish San Juan with most of its exports. What is the leading export?

gone to Porto Rico since it became a possession of the United States. The rest of the population is made up of colored people who are partly or wholly negroes.

Since the time when Porto Rico became a United States possession, much has been done to help the people. Schools for the children have been opened, and the people have been taught better ways to raise their crops. Hundreds of miles of good roads have been built, and the island is now almost encircled with a railroad, making it easy for plantation products to be carried to the ports. Steamships run regularly to Atlantic ports of the United States, providing a means of marketing large quantities of sugar, tobacco, and other Porto Rican products in our country.

**Finding likenesses.** Explain how Porto Rico and the Hawaiian Islands are alike in each of the following points:

- Surface of the land
- Winds
- Climate
- Leading crops
- Exports to the United States

## 6. OTHER ISLAND POSSESSIONS

Besides the more important possessions, the United States owns the Virgin Islands east of Porto Rico, and a number of small islands in the Pacific Ocean. Find some of the Pacific island possessions on the map on page 210. Can you think of any reason why the smaller island possessions are of value to our country?

**The Virgin Islands.** Find these islands on the map in the lower left corner of page 240. Of the three larger islands of this group St. Thomas is the most important because it is on the ocean steamship route between the ports of Europe and the Panama Canal. The port of St. Thomas is a fueling station, and the United States Government has a naval station there. On both St. Thomas and St. Croix our government has radio stations.

Most of the people of the islands get their living by farming, and their crops are much the same as those of the Porto Ricans.

**The Pacific islands.** The people on our small island possessions in the Pacific make their living very easily. The islands are warm the year round, little clothing is needed,



and vegetables and fruits grow plentifully. The only export of any importance from these islands is copra. See Figure 215.

These possessions are valuable to our country chiefly because they provide places far out in the Pacific Ocean for fueling ships and for naval, radio, and cable stations. You may think of them as ocean stopping places for a few ships and as centers for sending and receiving messages.

### *Trade with the Possessions*

During your study of this chapter you have learned several reasons why the United States finds its possessions valuable, and several ways in which the people of the possessions have been helped since they have been governed by the United States. One of the ways in which the United States and its possessions are most helpful to each other is through their trade.

You have discovered that the principal exports of the possessions to the United States are foodstuffs and raw materials, — things which the United States needs because it has so many people and so many mills and factories. You have also discovered that the principal imports of the possessions from the United States are manufactured goods, — things which the people need because they carry on little manufacturing. Thus the people of the possessions find the United States a valuable market for the products which they have for sale, and the United States finds the possessions a valuable market for some of its manufactures. The exchange of these goods through trade helps them both.

**A matching test.** Each place named in the left column below is the capital and largest city of one of the possessions named in the right column. Match the cities with the possessions correctly.

|          |                    |
|----------|--------------------|
| Honolulu | Alaska             |
| Juneau   | Porto Rico         |
| Manila   | Hawaiian Islands   |
| San Juan | Philippine Islands |

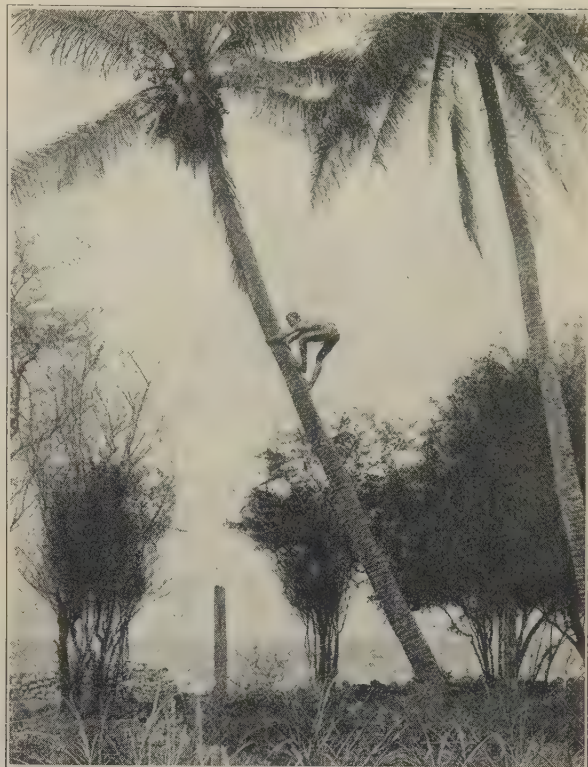


Figure 215. A native of the Pacific Islands climbing a coconut tree. He will cut off the coconuts with a sharp knife and let them fall to the ground.

**An import test.** Name one or more of the possessions from which the United States imports each of the following products:

|       |             |                   |
|-------|-------------|-------------------|
| furs  | copper      | canned salmon     |
| sugar | tobacco     | manila hemp       |
| gold  | coconut oil | canned pineapples |

**Some things to explain.** Explain why

1. The purchase of Alaska was worth while.
2. Alaska is thinly populated.
3. The Hawaiian Islands, the Philippines, and Porto Rico are much more densely populated than Alaska.
4. The people of the possessions import manufactured goods from the United States.
5. It was worth while for the United States to build the Panama Canal.

**Special credit work.** Find books which tell about the building of the Panama Canal, and make a report on this subject to your class.



Figure 216. Picking apples in Nova Scotia. In the Annapolis Valley, along the Bay of Fundy, are some of the most famous apple orchards in North America.



Figure 217. Fishing boats in Nova Scotia. These are the schooners that go on deep-sea-fishing trips to the Grand Bank. What kind of fish are caught there?

## NORTHERN NORTH AMERICA

### I. CANADA — OUR NEIGHBOR ON THE NORTH

**Foreword.** Canada is the country which stretches northward from the United States to the Arctic Ocean. It belongs to a great family of nations called the British Empire, or the British Commonwealth of Nations. Great Britain, in Europe, is the head of this family, and the other members are dominions and possessions. The dominions make their own laws, and are almost like independent countries. Canada is the largest of the British dominions.

Canada is larger than the United States, yet it has less than one twelfth as many people. Turn to Figure 251 on page 250 and find the part of Canada where most of the people live. Notice that this is the southern part of the country, and that the rest of Canada is very thinly settled.

As you read this chapter, find as many reasons as you can to explain (1) why Canada has so few people compared with the United States, and (2) why most of the people of Canada live in the southern part of the country.

#### 1. SOME COMPARISONS BETWEEN CANADA AND THE UNITED STATES

Our Canadian neighbors are very much like ourselves. More than three fourths of them speak the English language, and most of them live much as we do. They are friends as well as neighbors, and there has not been a war between the United States and Canada for many, many years. One reason for this friendship is that people in adjoining parts of Canada and the United States do about the same kinds of work. That helps them to understand each other's problems, and understanding helps to make them friends. Do you know why work in adjoining parts of Canada and our country is much the same?

Begin your study of this problem by working out the map studies in Group I on page 250.

**Likenesses in surface.** The map shows that the Western mountains and plateaus, the interior plains, and the Appalachian Highlands of the United States extend northward into Canada. Since the two countries share these natural regions, the surface of the land in ad-



joining parts of southern Canada and northern United States is much the same. This is one reason why work in southern Canada is much like work in neighboring parts of the United States.

**Climate in the two countries.** Figure 250 on page 250 shows another likeness. Notice that (1) the eastern half of southern Canada, like the eastern half of the United States, has plenty of rain for crops; (2) the western part of the interior plains of both countries is much drier; and (3) the Pacific coast is the rainiest part of both countries.

On the other hand, there is one very important difference between the climate of Canada and that of the United States. Since Canada is farther north, its growing season is shorter, and in northern Canada it is too short for agriculture. Does this help you to see why most of the people live in southern Canada?

**Political divisions of Canada.** The political divisions of Canada are called provinces and territories. They are shown on the map on pages 220-221. Study the list of abbreviations of province names, and find each province on the map. Then find the territories, which are north of the provinces. Which one borders our own territory of Alaska?

**Something to explain.** Nova Scotia, New Brunswick, and Prince Edward Island are called the *Maritime Provinces*. Look up the word *maritime* in the dictionary, and explain why they have been given this name.

## 2. THE APPALACHIAN REGION

The Appalachian region of Canada includes the Maritime Provinces and a small part of Quebec south of the St. Lawrence River. In surface and climate it is much like northern New England. Turn to the map on pages 220-221 and study the products and exports of the Maritime Provinces. What four kinds of work do you think are important there?



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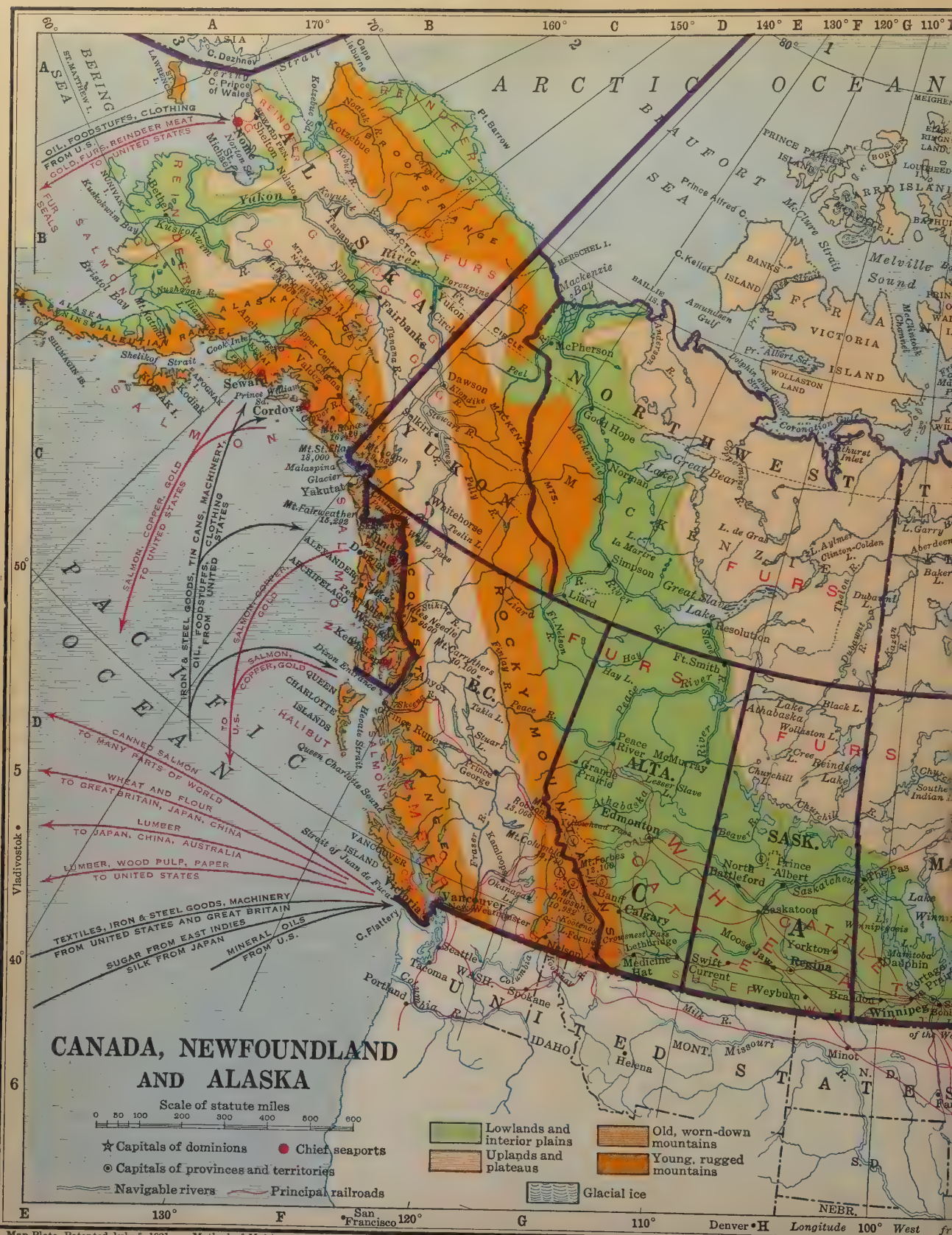
Figure 218. Silver foxes on a ranch on Prince Edward Island. The foxes are kept in big pens fenced with wire, and are given the best of food and care.

**Farming.** As in New England, the leading crops of the Maritime Provinces are those to which the hilly surface and cool, moist climate are best suited, — hay, potatoes, oats, and apples. Dairy farming is important, and butter and cheese are exported. Most of Prince Edward Island is used for farming, and many of the farmers specialize in raising seed potatoes. There are also good farm lands in the valleys of New Brunswick and Nova Scotia. See Figure 216.

Many farmers on Prince Edward Island raise foxes, because the pelts, or fur-covered skins, bring high prices. In this province there are also fox ranches which are used wholly for fox-raising. See Figure 218.

**Work connected with the sea.** Like New England, the Maritime Provinces have good harbors, and many of the people get their living from the sea. Inshore fishermen and lobstermen work in small boats near the coast, while deep-sea fishermen go out to the Grand Bank and to smaller fishing banks off the southern coast of Nova Scotia and in the Gulf of St. Lawrence. See Figure 217.









On shore large numbers of people are busy salting and drying codfish and canning lobsters for export. Most of the fish that are sold fresh are brought to the port of Halifax, and from there are sent in refrigerator cars to cities farther inland.

**Work connected with the forests.** Forest work in New Brunswick and Nova Scotia will remind you of Maine. Large numbers of trees are cut for lumber and pulp wood, and the logs are floated down the streams to saw-mills and pulp and paper mills. The streams not only help in getting the logs out of the forests, but they also furnish hydroelectricity for the pulp mills. In New Brunswick, which has more timber land than the other two provinces, the leading manufactures are lumber products, wood pulp, and paper.

**Ports that are busiest in winter.** On the map on pages 220-221 find Halifax and St. John (M5). These are the largest cities and the chief seaports of the Maritime Provinces. Both have harbors which are free from ice the year round. Neither one, however, is the leading seaport of Canada. That place is held by Montreal, which is on the St. Lawrence River, 1000 miles from the open sea.

In winter the St. Lawrence is frozen over, and for about four and a half months ships cannot reach Montreal. During that time many ships that would otherwise go to Montreal load and unload their cargoes at Halifax and St. John. Thus winter is the busiest season at the Maritime ports.

Among the exports of Halifax and St. John, what ones are products of the Maritime Provinces? What ones suggest the winter trade of these ports?

**Coal-mining and manufacturing.** In studying the map did you find the coal mines in the Maritime Provinces? More than a third of all the coal mined in Canada comes from Cape Breton Island and the mainland of Nova Scotia. Much of it is good coking coal,

and for this reason iron ore is imported from the neighboring island of Newfoundland, and iron and steel are manufactured. This kind of work is so important that Sydney and the neighboring towns on Cape Breton Island have been nicknamed "Little Pittsburgh."

In spite of their coal, the Maritime Provinces carry on far less manufacturing than New England does. The great manufacturing district of Canada is farther inland, in the lowlands of southern Quebec and Ontario. You will learn the reason for this in the next section.

**Making comparisons.** 1. Arrange the topics given below in two lists, heading one list "Likenesses between the Maritime Provinces and New England" and the second list "Differences between the Maritime Provinces and New England."

|         |             |               |
|---------|-------------|---------------|
| Surface | Farm work   | Mining        |
| Climate | Forest work | Manufacturing |
|         | Fishing     |               |

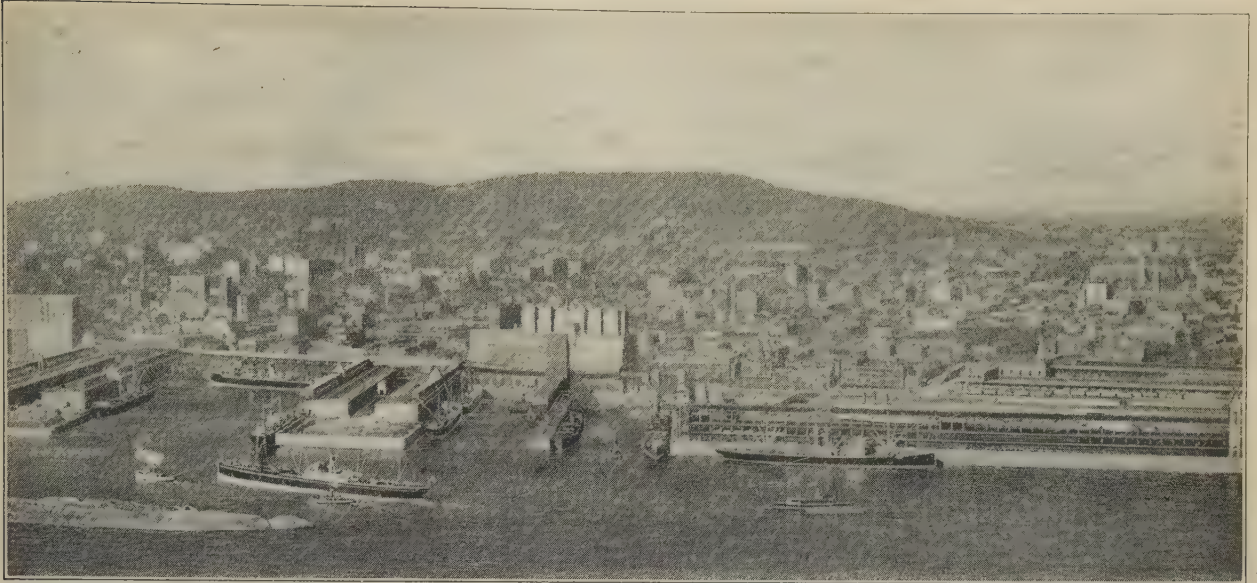
2. Explain how the Maritime Provinces differ from New England with reference to the topics in your second list.

### 3. THE SOUTHEASTERN LOWLANDS AND THEIR BORDERLANDS

Turn to the map on pages 220-221, and find the lowlands bordering the St. Lawrence River and the Great Lakes. In what provinces are they? These southeastern lowlands are the most densely settled part of Canada, and by far the most important manufacturing region. As you read this section, make a list of facts which help to explain why so many people live in this part of Canada.

**A great highway into North America.** You already know that the St. Lawrence River and the Great Lakes furnish a waterway for travel and transportation from the Atlantic Ocean into the heart of North America. The St. Lawrence is deep enough for ocean ships as far upstream as Montreal. Above





Courtesy of Royal Canadian Air Force

Figure 219. Part of Montreal. The hill is Mount Royal, a beautiful wooded park completely surrounded by the city. The large building on the water front in the center

of the picture is a grain elevator. Montreal exports more wheat than any other seaport in the world. To what country in Europe does much of the wheat go?

Montreal the river is shallower and has many rapids. By means of canals and locks smaller ships may go up the St. Lawrence from Montreal to Lake Ontario, and from there through the Welland Canal to Lake Erie. On the map on pages 220–221 trace the route for ships from Montreal to Lake Superior.

**The St. Lawrence Lowland.** If you sail up the St. Lawrence from its mouth, you will first see hills and mountains along the shores. A few miles below Quebec the valley broadens out, and fertile farm lands stretch back from the river banks to hills in the distance. This is the beginning of the thickly settled St. Lawrence Lowland. Most of the people here are French Canadians who carry on mixed farming.

**The "threshold city."** Quebec is a beautiful old French city built on a high bluff overlooking the river, and it is often called the "threshold city" of the St. Lawrence Lowland. It is the capital of the province of Quebec and a seaport of some importance, but in population and trade it ranks far below Montreal, which is 180 miles farther upstream.

**Montreal — the largest city of Canada.** When you reach Montreal, you will see many things to remind you that this is the greatest seaport of Canada. The water front is lined with freight yards, storage warehouses, and huge grain elevators. At the wharves and in the harbor are ocean liners and freighters, lake boats, and river boats. See Figure 219.

Since Montreal is the head of navigation for ocean ships on the St. Lawrence River, it is the point *farthest inland* where railroad trains can meet ships from the Atlantic Ocean. Thus, for the greater part of Canada, Montreal is the nearest Atlantic port. That is why Montreal, rather than Quebec, St. John, or Halifax, is the greatest seaport of Canada.

Montreal is also the greatest manufacturing city of Canada. Because of its location, raw materials can be obtained easily by train and by boat, and manufactured goods can be marketed easily in all parts of Canada and in other British dominions in distant parts of the world. Coal for the mills and factories comes by boat from Nova Scotia and by train from Pennsylvania, and hydroelectric power





Courtesy of Canadian National Railways

Figure 220. Logs in a river in the Laurentian Upland of southern Quebec. Every year millions of logs are floated down the streams to sawmills and pulp mills.

is furnished from power plants on the swift-flowing streams of the Laurentian Upland.

**The capital of the Dominion.** On the map on pages 220–221 find Ottawa, the capital of Canada (L5). In what province is it? On what river is it? Ottawa has many beautiful homes and fine government buildings. Besides being the city where the government of the Dominion is carried on, it is a great center for the manufacture of lumber, wood pulp, and paper. The next paragraphs will tell you why.

**Lumbering in the Laurentian Upland.** Bordering the St. Lawrence Lowland on the north is part of the Laurentian Upland, a region of thick forests and swift-flowing streams. Many of the farmers in the lowland find winter work in the lumber camps of the upland. The trees are cut in the autumn and early winter, and the logs are loaded on sleds and drawn over the snow to the banks of the nearest streams. When the ice breaks up in the rivers in the spring, the lumbermen roll the logs into the water, and let the swift current carry them downstream to sawmills and pulp mills. See Figure 220.

Much wood pulp is manufactured in the valley of the Ottawa River and in other river valleys of the Laurentian Upland, partly because the raw material is near at hand, and partly because the rivers furnish hydroelectric power for the pulp mills. Power for the mills in Ottawa comes from falls in the Ottawa River within the limits of the city.

**The Lake Plain.** On the map on pages 220–221 find the lowland of southeastern Ontario. This region is Canada's share of the level Lake Plain, and it is one of the most densely populated parts of the country. It has rich soils and a longer growing season than any other part of Canada except a small section on the Pacific coast. It is often called the "fruit garden" of Canada because so many apples, peaches, pears, plums, and grapes are grown there. What makes the Lake Plain especially well suited to fruit-growing?

Both the Lake Plain and the St. Lawrence Lowland are great dairying regions, and in addition to the milk and cream supplied to the cities, large quantities of butter and cheese are made for export. In parts of the Lake Plain, corn will ripen, and the raising of beef cattle and hogs is important. See Figure 221.



Courtesy of Canadian Department of Agriculture

Figure 221. Cows on a dairy farm on the Lake Plain of southern Ontario. What crops do the dairy farmers raise? Tell all you can about their work.



**A manufacturing region.** Because of its location, the Lake Plain is a busy manufacturing region. It is connected by railroads with all parts of Canada and with neighboring parts of the United States, and it has the added advantage of being on the Great Lakes-St. Lawrence waterway. Thus it has an excellent location for trade and for getting raw materials and marketing manufactured goods. Coal comes from Pennsylvania, and hydroelectric power from Niagara Falls.

Many different kinds of manufacturing are carried on, but those which depend chiefly on iron and steel are especially important. Iron ore is brought down the lakes from Minnesota, and there are blast furnaces, steel mills, and many factories where farm machinery, automobiles, and other products of iron and steel are made.

The greatest business center of the Lake Plain is Toronto, on Lake Ontario. Find this city on the map on pages 220-221 (L5), and notice its railroads. Toronto is a busy lake port, and carries on much trade with the United States. Because of its location, shipping, and railroads, it is the second largest city and manufacturing center of Canada. See Figure 222.

**Mining in the Laurentian Upland.** North of the Lake Plain, in the Laurentian Upland of Ontario, are the greatest mining districts of Canada. Find these districts on the map, and name the metals that are mined there. More than nine tenths of all the nickel mined in the world comes from this part of Canada, as well as millions of dollars' worth of gold, silver, and copper. How many uses of nickel can you name?

**Asbestos mines.** In the Appalachian region of Quebec, southeast of the St. Lawrence Lowland, are mines which produce more than four fifths of the world's asbestos. Raw asbestos looks like a mass of silky gray fibers, but since it is a rock material it will not burn.



Figure 222. Part of the harbor and manufacturing district of Toronto. What kind of manufacturing do the big tanks in the picture suggest? Why is the manufacturing district close to the lake front?

It is dug from pits in the earth and is used in making firemen's clothing, steam-pipe coverings, and other things which provide protection against fire.

**A check.** 1. How many of the following facts have you listed as reasons which help to explain why the southeastern lowlands are the most densely settled region of Canada?

- Level land and fertile soils
- Location on a great highway of travel and transportation
- Advantages for obtaining raw materials and marketing manufactured goods
- Plentiful hydroelectric power

2. After you have studied the list of facts, copy the following sentence, filling in the blanks with the correct words:

The southeastern lowlands of Canada are densely populated because (1) they are excellent f--- lands, and (2) they are well located for carrying on t---- and m-----.

**Special credit work.** The St. Lawrence Valley of southern Quebec is often called "French Canada." See if you can find out why.



Courtesy of Canadian National Railways

Figure 223. Threshing wheat on the prairies of Canada. Why is spring wheat grown here rather than winter wheat? Tell all you can about the work of the wheat

farmers from the time they plant the seed until they market the grain. From what seaport are large quantities of Canadian wheat exported to distant lands?

#### 4. THE INTERIOR PLAINS

Turn to the map on page 251, and find the part of the interior plains which stretches from the United States northward through Canada. Notice that this is the drier western part of the plains. In southern Canada, as in the United States, this is a great farming and grazing region. What reasons can you suggest for this likeness in the use of the land?

**The Prairie Provinces.** On the map on pages 220–221 find the provinces of Manitoba, Saskatchewan, and Alberta. They are called the *Prairie Provinces*. Notice that the southern part of these provinces has many railroads. This part is a prairie grassland. The northern part of the plains is quite different, for it lies in a belt of forest which stretches westward from the Laurentian Upland.

**Farm work in the prairies.** The farmers of the Canadian prairies have much the same kind of surface, soils, and climate to work with as the farmers in neighboring parts of the United States, and so they raise the same crops. Spring wheat is their principal money

crop, and the prairies are the great wheat lands of Canada. See *Figures 223 and 224*.

The growing season in the prairies is too short for corn to be an important crop, but it is long enough for oats, barley, rye, and flax. These crops are next in importance to wheat, just as they are in the spring-wheat lands of the United States. Many of the farmers also raise cattle, using part of their land for pasture each year, and part for forage crops.

**How the wheat goes to market.** About three fourths of the wheat raised in the Canadian prairies is exported, chiefly to Great Britain. Much of the wheat of Alberta goes westward to the Pacific coast and is shipped to Europe by way of the Panama Canal. From Saskatchewan and Manitoba most of the wheat for export goes by train to Fort William or Port Arthur on Lake Superior. Find these two lake ports on the map on pages 220–221 (*K5*), and study Figure 225.

At Fort William and Port Arthur the wheat is loaded on lake freighters. The smaller freighters go all the way to Montreal. What route do they follow? The larger freighters





Courtesy of Canadian Government Department of Immigration and Colonization

**Figure 224.** Grain elevators in a prairie town in western Canada. What are the elevators used for? Why are they built along the railroad tracks?

cannot go beyond Lake Erie because the Welland Canal is not deep enough for them. Therefore some of them leave their cargoes at ports on the eastern side of Lake Huron, and from there the wheat goes by train to Montreal. Others go farther down the Lakes to ports of the United States on Lake Erie, and from there the wheat goes by train to New York and other seaports of the United States for export to distant parts of the world.

**Canadian ranches.** In the southwestern part of the prairies there is less rain than farther north and east, and much of the land is used for grazing instead of for crops. These prairie grazing lands have good grass, and therefore many more cattle than sheep are raised. In places there are irrigated lands where hay and forage crops are grown for extra feed for the live stock.

**Prairie coal fields.** In the prairies and bordering mountains of Alberta there are soft-coal fields. About as much coal is mined here as in Nova Scotia,

and these two provinces produce more than two thirds of all the Canadian coal.

**A gateway city.** On the map on pages 220–221 find Winnipeg, the capital of Manitoba (J5). This is the third largest city of Canada, and the most important manufacturing center west of the Lake Plain. Study the railroads of Winnipeg. Do you see that in crossing Canada by train you *must* pass through this city? Winnipeg, then, is the inland gateway between the Canadian East and the Canadian West. See Figure 226.

Because of its location and railroads, Winnipeg is a great market for grain and live stock from the Canadian prairies, and a great distributing point for manufactured goods from eastern Canada. It is also a flour-milling and meat-packing center. Many other kinds of manufacturing are carried on, for raw materials and coal can be obtained easily by train, and the cities and towns of the prairies provide good markets for manufactured goods.

**Other cities of the prairies.** There are several other good-sized cities in the prairies, but they are much smaller than Winnipeg. They are shipping points for wheat and other prairie products, and trading centers for the



Courtesy of Canadian Government Department of Immigration and Colonization

**Figure 225.** Lake boats loading wheat at Fort William. How does the wheat reach Fort William and Port Arthur? Of what cities in the United States do these Canadian lake ports remind you?



Courtesy of Canadian Pacific Railway

Figure 226. The railroad yards at Winnipeg. What do you think the freight trains bring to Winnipeg from the West? from the East? What do they carry eastward to Fort William and Port Arthur?

surrounding farm and ranch lands. They also have flour mills and stockyards, and are manufacturing centers of some importance.

The largest of these cities are Calgary, which is often called the "gateway to the Canadian Rockies," and Edmonton, the capital of Alberta. Find Calgary and Edmonton on the map (G4). Explain why the largest cities of the prairies are on the eastern and western margins of the region.

**Giving reasons.** Read each sentence below, and give a reason for the fact which it states. In order to give some of the reasons, you may need to study the maps or to review some of the things that you have learned about the interior plains of the United States.

1. The southwestern part of the Canadian prairies has less rain than the eastern part.
2. The growing season is longer in the southern part than in the northern part.
3. More land is used for grazing in the southwestern part than in the eastern part.
4. Nearly all the grain that is sent east from the prairies passes through Winnipeg.
5. The Great Lakes are of much help in marketing Canadian wheat.
6. Fort William and Port Arthur are "the Duluth and Superior of Canada."
7. Calgary is "the Denver of Canada."

## 5. THE CANADIAN FAR WEST

The Far West of Canada, like the western part of the United States, is made up of a plateau region bordered on both sides by young, rugged mountains. On the east are the Canadian Rockies, and on the west are the Coast Ranges. Find these regions on the map on pages 220-221, and make a list of the kinds of work that seem to be most important there.

**The Canadian Rockies.** If you travel west from Calgary, you will pass through the Canadian Rockies, which are famous for

their wonderful mountain scenery. Within this region are several Canadian national parks. They are mountain playgrounds, with snow-capped peaks, glaciers, waterfalls, and deep, quiet lakes. So many people visit these playgrounds each summer that the tourist business is very large. See Figure 227.

Most of the people of the Canadian Rockies live in the southern, or warmer, part of the region, which is shared by British Columbia and Alberta. Farming is carried on in the



Courtesy of Canadian National Railways

Figure 227. Summer visitors climbing over a glacier on Mount Robson in the Canadian Rockies. Find Mount Robson on the map on pages 220-221. How high is it?





Figure 228. Lumbermen starting to cut down a big Douglas fir in the Coast Range of British Columbia.



Figure 229. Cedar logs in a mill pond in British Columbia. Notice how large the logs are. Why are there such thick forests in the mountains along the coast of our Northwestern States and of British Columbia?

larger valleys, and lumbering and grazing provide work for a good many of the people.

The southernmost part of the Rockies in British Columbia is the second most important mining region of Canada. From the map on pages 220–221 name the metals that are mined there. Coal from mines along the boundary between British Columbia and Alberta and hydroelectricity from the swift mountain streams are used in smelting and refining the ores.

**The interior plateau.** Work in the southern part of the interior plateau is much like work in the Columbia Plateau. Wheat is raised on many of the farms, and the growing of fruit — especially apples — is important in the valleys.

**The Pacific coast.** The Pacific coast of Canada is part of the rugged, thickly forested region that begins in northern California and extends northward into Alaska. In British Columbia there is no valley lowland like the Puget Sound Lowland of Washington, and so farming is less important. Dairying is carried on to supply the cities with milk and cream, and vegetables and fruits are grown, partly for the city markets and partly for canning.

The Coast Range is a great lumbering region, and the logging camps and sawmills are like those farther south in Washington and Oregon. British Columbia leads all the provinces in the production of lumber and the manufacture of lumber products. Some of the lumber is cut for pulp wood, and the manufacture of wood pulp is increasing. See *Figures 228 and 229*.

British Columbia also leads in fishing, chiefly because it has a large share in the salmon fisheries of the Pacific coast of North America. There are many salmon canneries, and the canned salmon of British Columbia is the most valuable fishery product of Canada.

Canadian fishermen also catch large numbers of halibut on fishing banks near the Queen Charlotte Islands. The halibut are taken to Prince Rupert, where they are packed in ice and sent by train to cities in the eastern part of Canada and the United States.

**Pacific coast ports.** Study Figure 230, and then find Vancouver on the map on pages 220–221 (*F5*). In what part of British Columbia is it?

Vancouver has a large, deep harbor, and for this reason it was chosen as the western





Courtesy of Canadian National Railways

Figure 230. Looking across the business district of Vancouver to the harbor. Find some railroad freight yards in the picture. In the lower left corner of the pic-

ture are the buildings of a lumber mill, and floating in the water close by are rafts of lumber. To what countries does Vancouver ship large quantities of lumber?

end of the first transcontinental railroad of Canada. Transcontinental means "across the continent." The railroad brought trade, and trade has made Vancouver the largest Canadian city west of Winnipeg and the chief Pacific seaport. Most of Canada's trade with countries bordering the Pacific Ocean is carried on through this port. Study the map and tell all you can about Vancouver's export and import trade. Which of the exports shows that Vancouver is a Pacific gateway for products of the Canadian prairies?

Among the manufacturing plants of Vancouver are lumber mills, shipyards, salmon canneries, and a sugar refinery. Study the map and tell where the raw sugar for the refinery comes from.

Victoria, on Vancouver Island, is the capital of British Columbia, but it is much smaller than Vancouver. It is a port of some im-

portance, but its harbor is not deep enough for the largest ocean ships.

Near the northern end of the Pacific coast of Canada is Prince Rupert. Like Vancouver, it has an excellent harbor, and is the western end of a transcontinental railroad. As yet, however, it is a much smaller city and port than Vancouver.

*A check.* Read over the list that you made before you began to read this section. Did you name all the more important kinds of work in western Canada? If not, add those which you left out.

*Some things to prove.* Give as many facts as you can to prove that

1. Work in the Canadian Rockies is much like work in the Rockies of the United States.
2. Work on the Pacific coast of Canada is much like work on the coast of Washington.
3. Vancouver is like Seattle in many ways.



## 6. NORTHERN CANADA

Northward from the settled part of Canada stretches a wilderness of forests, lakes, and streams, and still farther north are the frozen, treeless plains which we call tundra. Most of northern Canada is either too rocky or too cold for farming, and therefore it has very few people. Those who do live there are mostly Indians and Eskimos. Do you know how they make their living?

**The great northern forest.** On the map opposite page 1 find the great belt of forest that stretches across northern Canada. In the east the only settled parts of this forested belt are along the southern margin of the Laurentian Upland, where there are lumbering and mining districts, and ports on Lake Superior and Lake Huron. Farther west the only settlements are along the northern margin of the prairies, where a little land has been cleared for farming.

**Indian life in the forest.** The rest of this great northern forest is a land of wild animals and of Indians who trap the animals for their furs. Here and there along the rivers and on the shores of Hudson Bay are trading stations where white men meet the Indians in the summer to trade for furs.

The Indians live in tents in the woods, and all winter long they are busy trapping wild animals. In the summer they load their winter's "catch" of furs in canoes and paddle down the streams to the trading stations. There they trade the furs for supplies such as steel traps, guns, knives, and clothing, and then paddle back to their hunting grounds.

Montreal is the great fur market of Canada, and millions of dollars' worth of furs are brought there from the North each year.

**Yukon gold-mining.** On the map on pages 220-221 find Dawson, the capital of Yukon Territory (E3). This little town is the center of a gold-mining district which was once



Courtesy of Revillon Frères

Figure 231. A fur-trader buying white fox skins from some Eskimos. What kind of clothes is the Eskimo at the left wearing? Why do the fur-traders make their trips to the Far North in the summer time?

much greater than it is today. Here, as in the Yukon Plateau of Alaska, mining is the most important work, and a little farming is carried on to help to feed the people.

**Eskimo life in the Far North.** Most of Canada north of the arctic circle is the cold, treeless tundra. The tundra is the land of the Eskimos. The Canadian Eskimos have no reindeer, and they get their food and clothing by fishing and by hunting seals, walruses, caribou, and other animals. In summer they live in skin tents which can be carried easily as they move from one hunting ground to another. During the long, cold winter they live in igloos — round huts made of blocks of snow or of rocks covered with snow.

In parts of the Far North of Canada there are trading stations where some of the Eskimos trade with white men, exchanging furs for guns and other things that they cannot make for themselves. The trading is done in the summer when boats from Montreal visit the trading stations. See Figure 231.

**Special credit work.** Try to find books which tell about the Eskimos of the Far North, and describe their life to your classmates.



Figure 232. The harbor of St. John's, Newfoundland. Find the entrance to the harbor between the rocky headlands in the distance. Do you think this is a safe

harbor for fishing schooners and other boats? Why? What do ships bring to St. John's from other countries? What products of Newfoundland do they carry away?

## II. NEWFOUNDLAND AND LABRADOR

**Foreword.** You may be surprised to learn that the island of Newfoundland does not belong to Canada. Together with Labrador, it forms a separate British dominion in North America. Labrador has very few people, and nearly all of them are fishermen. Newfoundland has more people, but even so, it is thinly settled. Most of the towns are along the coast, and large numbers of the people get their living by fishing. Can you suggest any reason why fishing is more important than farming in Newfoundland?

**Two reasons why farming is hard.** Find Newfoundland and Labrador on the map on pages 220–221. Notice that Labrador is part of the Laurentian Upland. Newfoundland belongs to the Appalachian region. From what you know of these two regions, do you think the surface of Labrador and Newfoundland is well suited to farming? Explain your answer.

Rough surface is one hindrance to farming, but climate is an even greater one. Labrador is so cold that it has no farms, and even in Newfoundland, which is farther south, the summer is so cool and damp that only a few crops such as hay, oats, and potatoes can be grown successfully.

The principal reason for the cold climate is the Labrador Current. Find this cold current

on the map on page 306 and trace its course southward from the Arctic Ocean. Its icy waters chill the winds that blow from the sea toward Labrador and Newfoundland, keeping these lands from ever being very warm, even in the summer.

Because of the rough surface and cold climate, few people in Newfoundland can make their living by farming, and foodstuffs are among the leading imports from the United States and Canada.

**Newfoundland fisheries.** Poor land for farming has led the people of Newfoundland to depend largely on the sea for their living. Fortunately, fish are abundant in the surrounding waters. The Grand Bank is only a hundred miles away, and there are many smaller fishing grounds near enough to be reached easily from Newfoundland ports.

The fisheries are of three kinds — inshore fishing, deep-sea fishing, and sealing. Inshore fishing is carried on mostly in the warmer months when there is the least danger of storms. Large numbers of cod, herring, and lobsters are caught, and there are many lobster canneries along the coast.

On the map on pages 220–221 find St. John's, the capital of Newfoundland (N5). At almost any time of year you can see deep-



sea-fishing boats leaving St. John's for the Grand Bank, or returning with their "catch," which is chiefly cod. See Figure 232.

Most of the codfish caught by the shore fishermen and the deep-sea fishermen are salted and dried, and dried cod is one of the chief exports of Newfoundland.

The sealing boats leave St. John's in the middle of March for the southern shores of Labrador, where herds of seals gather on the floating ice at that time of year. These are not fur seals, but they are valuable for their skins, which are used to make leather, and for their fat, which is used to make oil.

**Other work.** Much of Newfoundland is covered with forests of spruce and other evergreen trees. The trees are not large, but the timber is excellent for pulp wood, and lumbering is carried on in many places. Large mills for the manufacture of wood pulp and paper have been built, and paper is an important export.

You have already learned that iron ore is mined in Newfoundland. The mines are on a little island northwest of St. John's, and the ore is exported, chiefly to Nova Scotia.

**Labrador.** The interior of Labrador is part of the great forest belt which you learned about in your study of Canada. Some day this part of Labrador may produce much timber and pulp wood, but at present only a few Indian trappers live there.

The coast of Labrador is so cold that it is bare and treeless. The only settlements are tiny villages of fishermen.

**Some things to explain.** 1. Turn to the map on page 251, and notice that Newfoundland and Labrador are in about the same latitude as the Pacific coast of Canada and southeastern Alaska. Explain why Newfoundland and Labrador are colder than the Pacific coast lands in the same latitude.

2. Explain why there are more fishermen than farmers in Newfoundland.

**A regional test.** Choose the name of the region of Canada which completes each of the following sentences correctly :

1. The Canadian wheat lands are in the Rocky Mountains. interior plains.  
Laurentian Upland.

2. The greatest lumbering region is the Lake Plain. Pacific coast region.  
Rocky Mountains.

3. The greatest pulp-wood region is in the southern part of the Laurentian Upland. interior plains.  
interior plateau.

4. The leading district in the production of metal ores is in the St. Lawrence Lowland. Laurentian Upland.  
Appalachian region.

5. The people who get their living by salmon-fishing live in the Appalachian region. Pacific coast region.  
Lake Plain.

6. The chief manufacturing centers are in the southeastern lowlands. Appalachian region.  
Rocky Mountains.

**Giving reasons.** Complete each sentence below by giving reasons :

1. Most of the people of Canada live in the southern part of the country because growing.

2. Canada has fewer people than the United States because of the adverse climate.

3. Work in southern Canada is much like work in neighboring parts of the United States because climate, soil, and water.

4. Montreal is the greatest seaport of Canada because fastest inland route.

5. Montreal and Toronto are the leading manufacturing cities of Canada because of their location, shipping & railroads, etc.

**A location test.** Locate each of these Canadian cities on the map. Tell something about the location of each one which explains the kind of work which is done there.

|          |          |               |
|----------|----------|---------------|
| Halifax  | Montreal | Calgary       |
| Sydney   | Ottawa   | Edmonton      |
| St. John | Toronto  | Vancouver     |
| Quebec   | Winnipeg | Prince Rupert |



Photograph by Ewing Galloway, N.Y.

Figure 233. Two volcanic peaks — Popocatepetl and Iztaccihuatl — as they look from Puebla, Mexico. These mountains are in the tropics, but they are so

high that their peaks are covered with snow. Find them on the map on pages 240–241 (E 4). How much higher are they than Mount Whitney in California?

## SOUTHERN NORTH AMERICA

### I. MEXICO — OUR NEIGHBOR ON THE SOUTH

**Foreword.** The southern part of North America and much of South America were explored and settled by people from Spain who conquered the native Indians and divided their lands into Spanish colonies. Later the colonies won their freedom and became independent countries. We call them Spanish-American countries because they once belonged to Spain and because their educated people speak the Spanish language.

Our nearest neighbor among the Spanish-American countries is Mexico. In the early days many of the Spanish settlers married Indians, and today more than half the Mexican people are of mixed Spanish and Indian blood. They are called *mestizos*. There are also large numbers of Indians. Only about one tenth of the population is made up of white people, who are chiefly of Spanish descent.

Mexico is a country of great *natural resources*, but they are not well developed. That means that Mexico has valuable farm lands,

forests, minerals, and streams, but that the people have not been able to make the best use of them. One reason for this is that many of the Indians and mestizos are poor and ignorant, and as they cannot buy machinery they do their work in slow, old-fashioned ways. As you read this chapter, try to think what the Mexican people need to do to make better use of their natural resources.

#### 1. A LAND OF CONTRASTS

Mexico is often called "a land of contrasts" because it has such great contrasts, or differences, in surface and climate. You can discover some of these contrasts for yourself by working out the map studies in Group II on page 250.

**Map discoveries.** From the map you have discovered three important facts: (1) that Mexico is made up mostly of natural regions which are southward extensions of the high mountains and plateaus of our Western States;



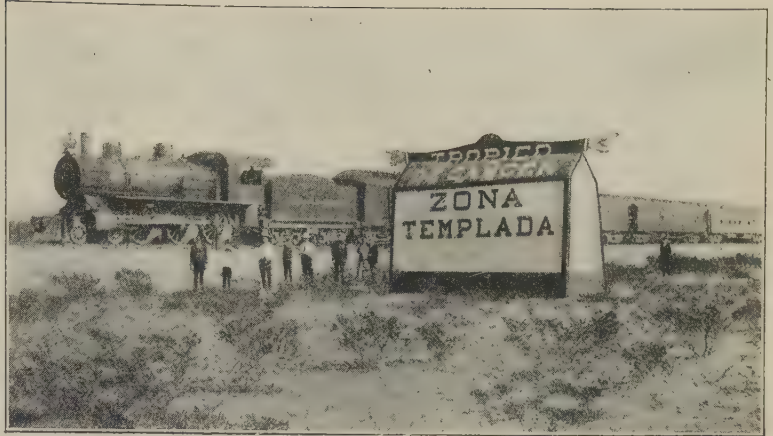
(2) that the eastern part is a southward extension of the Gulf Coastal Plain; and (3) that the southern half of Mexico is in the torrid zone. See Figure 234.

**Contrasts in surface.** You can easily see that the contrasts in surface in the regions of Mexico are very great. The Mexican Plateau, which makes up the interior of the country, is a broad, high plain, with scattered mountain ranges rising above its surface. In the north it is about 4000 feet above sea level, and it rises to about 8000 feet in the south.

Bordering the plateau on the east, south, and west are the high *sierras*, — young, rugged mountains much like those in the western part of our own country. The highest mountains are volcanic peaks in the Southern Sierra Madre. See Figure 233.

From the snow-capped peaks shown in Figure 233 it is less than 150 miles to the Coastal Plain bordering the Gulf of Mexico. This is the largest lowland region of Mexico. There are also lowland plains along the western coast, but they are much narrower.

**Contrasts in rainfall.** Much of Mexico is in the belt of the northeast trade winds. These winds of the Northern Hemisphere blow from the northeast toward the equator, and in passing over water they gather up much moisture. If, on reaching land, they are forced to rise to cross highlands, they become cooler and give up much moisture in the form of rain. For these reasons the narrower parts of the Gulf Coastal Plain and the eastern slopes of the *sierras* are rainy and thickly forested, while the regions west of the mountain ranges are much drier. The southern part of Mexico has more rain than the northern part, and, as you might expect, it has more people.



Courtesy of the Pan American Union

Figure 234. A sign marking the place where a railroad crosses the tropic of Cancer in Mexico. The arms on the sign point east and west along the line of the tropic. The land on this side of the sign is in the temperate zone (*zona templada*), and the land on the other side is in the torrid zone. Is the train coming from the north or from the south?

**A surprise.** You will remember that in our own country the Coastal Plain is much more thickly populated than the interior plateaus. You may be surprised, then, to learn that nearly two thirds of all the people of Mexico live in the southern part of the Mexican Plateau. To understand this, you need to know more about the differences in climate between highlands and lowlands.

**Elevation and climate.** Because of its latitude, or distance from the equator, you might expect the southern part of Mexico to have a hot, tropical climate. This would be true if all that part of Mexico were a lowland, but it is not true because there are great differences in *elevation*. Elevation is the height of the land above the level of the sea.

Elevation makes such differences in climate in southern Mexico that the land may be divided into three belts, for which the Mexican people have special names. The lowest belt is the *tierra caliente*, or hot land, where the weather is hot the year round. It extends from sea level up to about 3000 feet and includes the coastal lowlands and the lower parts of the adjoining mountain slopes.

The next higher belt is from 3000 to 7000 or 8000 feet above sea level and is called the *tierra templada*, or temperate land. Here, because of greater elevation, the weather is never very hot or very cold. This belt includes part of the mountain slopes and most of the interior plateau, and its climate is so mild the year round that the Mexicans call it "the land of everlasting spring."

The highest belt is the *tierra fria*, or cold land. It includes the mountain slopes that are above 7000 to 8000 feet in elevation, where the weather is cool all the time. The higher mountains rise above the tree line, and the highest peaks are snow-capped part of the year.

Now you can understand why the southern part of the Mexican Plateau is so much more thickly populated than the Coastal Plain. Most of the plain is in the *tierra caliente*, where the weather is uncomfortably hot all the time. The southern part of the plateau is so high that it is mostly in the *tierra templada*, and its climate is much more comfortable and healthful than that of the low Coastal Plain.

**An airplane test.** On the map on pages 240–241, find the line of 25° north latitude. Imagine that you are going to fly in an airplane from east to west across Mexico along this line. Name the natural regions of Mexico in the order in which you will fly over them. What do you expect to see growing on the eastern slopes of the sierras? Why? How do you expect the regions west of the mountains to look? Why?

## 2. THE MEXICAN PLATEAU AND THE SIERRAS

The northern part of the Mexican Plateau is much like the Great Basin in the United States. Vast stretches of the land are nearly level, but there are mountain ranges here and there. Trees are scarce, and much of the land is covered with bunch grass and desert shrubs. The southern part of the plateau is higher and has more rain. Study the map on pages 240–241 and tell what kinds of work are important in the plateau.

**Mexican haciendas.** The northern part of the Mexican Plateau is too dry to be a good farming region, and much of the land is used for raising cattle. Most of the better grazing lands belong to huge estates called *haciendas*. Some of the haciendas are as large as our smaller states, and on many of them there are from 500 to 2000 people. Most of each hacienda is pasture land, where large herds of cattle graze, tended by cowboys on ponies.

Somewhere on the hacienda is the owner's house, which is large and has thick walls of *adobe*, or bricks made of sun-dried mud. Close by are irrigated gardens, corrals, or fenced inclosures for horses and cattle, and little adobe huts for some of the ranch workers.

Scattered over the hacienda, often many miles apart, are little villages of adobe huts which are the homes of *peons*, as the poorer working people of Mexico are called. The peons are Indians and mestizos. They help with the work on the hacienda, and they raise corn, beans, and onions to supply themselves with food.

Fortunately, the little rain that falls comes mostly in summer, and this, with irrigation water from springs, wells, or streams, makes it possible for the peons to raise their crops of corn and vegetables. Many of them do their farm work with only the simplest tools, — a wooden plow which is drawn by oxen, a hoe, and a sickle to cut the grain. Farm work done in such old-fashioned ways is slow and hard. See Figure 235.

**An irrigation district.** On the map on pages 240–241, find the part of the plateau where cotton is an important crop. Here large tracts of land are watered from streams by modern methods of irrigation, and in addition to cotton the farmers raise excellent crops of corn, wheat, alfalfa, and beans. There are other places in the plateau where large tracts of land could be irrigated, and in time the Mexicans will do more farming in this way.





Figure 235. A Mexican farmer using a wooden plow drawn by oxen. Some of the farmers have steel plows, but many still use the old-fashioned wooden ones.

**The better farm lands of the plateau.** Since the southern part of the plateau has more rain than the northern part, it is better suited to farming, and more of the land is used for crops. The peons of this section raise large quantities of corn, smaller quantities of wheat, beans, and barley, and many kinds of vegetables. Much of the rain comes in summer when the crops need it; and where there is too little rain, streams from the bordering mountains furnish water for irrigation. But here, as farther north, much of the farm work is done in old-fashioned ways, and the crops are not so large as they might be.

**Mineral wealth of the plateau.** Long before the Spaniards came to Mexico, the Indians were mining silver and gold in the plateau. This is one of the richest regions of the world in metal ores, and mining is carried on in hundreds of places. From the map on pages 240-241 name five different kinds of metals that are mined in the Mexican Plateau. The ores in this region and those in the bordering mountains make Mexico one of the greatest mining countries in the world, and the leading country in the production of silver. See *Figure 236*.



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Figure 236. Mexican miners pushing cars of ore out of a gold and silver mine. What kind of power might be used to do this work more quickly and easily?

In some of the mines machinery is used for mining and crushing the ores just as it is in our own country. In many of them, however, the work is done quite differently. The ores are dug with picks and shovels, crushed with big stone rollers drawn by mules, and then sorted by hand and packed in sacks. From some of the mines the sacks of ore have to be carried long distances to the railroads on the backs of donkeys or in motor trucks. In mining, as in farming, some of the Mexican people need to use more modern methods in doing their work.

**The sierras.** As you would expect, the high, rugged sierras which border the plateau have few people. The moist, eastern slopes are forested, and many parts of the mountains are rich in metal ores. Nevertheless, there is less lumbering and mining than you might expect, because few railroads have been built, and without railroads it is hard to get the logs and the ores out of the mountains.

**The larger cities of Mexico.** Most of the larger cities of Mexico are in the plateau and the foothills of the bordering mountains. They are business centers for the surrounding farm lands, ranch lands, and mining districts.



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Figure 237. Some beautiful homes in Mexico City. Broad streets, flower gardens, and houses built in Spanish style make this one of the most attractive cities in the Americas.

On the map on pages 240–241 find the city of Mexico (*E4*). This is the capital and largest city of Mexico, and it has nearly a million people. It has many beautiful homes, and many fine streets, parks, and public buildings. Most of the buildings are low, and even the tallest ones have only a few stories. This part of Mexico is sometimes shaken by earthquakes, and when these tremblings of the earth occur, low buildings are less likely to be damaged or thrown down than high buildings are. See Figure 237.

If you visit one of the better houses, you will find that it is built around three sides of an open court, or *patio*, in which there is a beautiful garden. All the rooms of the house open on the patio, where the members of the family spend much of their time. On the side toward the street the house is built out to the sidewalk, and there is no front yard. You will notice that few of the houses have chimneys. That will remind you that Mexico City is in the *tierra templada*, where furnaces are not needed because of the mild climate.

The middle of the day is warm, but late in the afternoon the air becomes cooler, and by bedtime it is so chilly that everybody sleeps under a blanket. This change in *temperatura*, or amount of heat, between day and night is something that you will notice wherever you travel in the tropical lands.

The map shows that Mexico City is connected by railroads with seaports on the Gulf and Pacific coasts and with cities of the United States. Because of its railroads and its location in the most thickly populated part of the country, it is the leading business center of Mexico and the chief distributing point for manufactured goods from the United States and Europe.

Mexico is not a great manufacturing country, but the larger cities have a good many mills and factories which use raw materials from Mexican farms, ranches, and mines. Ores are smelted at San Luis Potosí, Chihuahua, and other cities in the mining districts, and steel is manufactured at Monterrey. Mexico City and Guadalajara have textile mills, tanneries, shoe factories, flour mills, and meat-packing plants. Puebla and Orizaba are cotton-manufacturing cities, and their mills turn out large quantities of cheap cotton cloth which the peons use for clothing.

*Some things to explain.* 1. Explain how each kind of manufacturing named above is connected with work on the farms and ranches and in the mines of the Mexican Plateau.

2. Explain how work in the Mexican Plateau is connected with the trade of the seaports on the Gulf of Mexico. See map, pp. 240–241.

3. Explain why there is more farming in the southern part of the Mexican Plateau than in the northern part.

4. Explain how more farming might be carried on in the northern part of the plateau.



### 3. THE COASTAL REGIONS

On the map on pages 240–241 find the Sonoran Desert and the peninsula of Lower California. Then study Figure 250 on page 250 and tell how these regions differ from the Gulf Coastal Plain in rainfall. Suggest ways in which you think work on the Gulf Coastal Plain differs from work in coastal regions bordering the Pacific Ocean.

**Lower California and the Sonoran Desert.** These coastal regions of Mexico have little rain and are thinly populated. Along the coastal plain bordering the Sonoran Desert streams from the Western Sierra Madre provide water for irrigation, and each valley is a little farming section. The farmers raise many different crops, and they export fruits and early vegetables to the United States.

At the northern end of the Gulf of California the Colorado River furnishes water for irrigation. The irrigated lands here are a southern extension of those of the Imperial Valley of California and the Yuma district of Arizona, and one of the principal money crops is cotton.

Outside the irrigated sections the principal kinds of work in Lower California and the Sonoran Desert are grazing and mining. Here, as in so many parts of Mexico, more mining could be done if there were more railroads.

**Forests and plantations of the Gulf Coastal Plain.** The map shows that the Gulf Coastal Plain of Mexico borders the entire eastern coast of the country, and that it includes the broad peninsula of Yucatan. North of the tropic of Cancer the rainfall is light, and along the Rio Grande farming is carried on by means of irrigation. From the tropic southward the rainfall grows greater, and much of the plain is so hot and moist that it is covered with thick tropical forests which make the land hard to clear for farming. In places the undergrowth of bushes and plants is so thick that a man can hardly get through it



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Figure 238. A native hut in the tropical forest not far from Vera Cruz. Why is a region of this kind unhealthy, especially for people of the white race?

without a knife to cut his way. This region is part of the *tierra caliente*, where the weather is hot the year round. Because of the heat and moisture and the insects which spread disease the climate is unhealthy, especially for white people.

The people of this region are mostly Indians and mestizos, who wear few clothes, live in little grass-roofed huts, and get their living by working in the forests or on the plantations. See Figure 238.

Some of the tropical trees, such as mahogany, provide beautiful wood for making furniture, while the wood of others is useful for making dyes. Still other trees are valuable for their gums and juices. One of the juices is chicle, which is exported to the United States for use in the manufacture of chewing gum. Lumbering is carried on in many places, but because there are few railroads there is less of this work than you might expect.

In places where the forests have been cut down and the land cleared, there are plantations of sugar cane, rice, bananas, and tobacco, and on the lower mountain slopes along the inner margin of the plain there are











Courtesy of International Harvester Company of America, Inc.

Figure 239. Mexican peons cutting sisal hemp. They cut the leaves from the henequen plants with sharp knives and then bind them in bundles.



Courtesy of International Harvester Company of America, Inc.

Figure 240. Drying sisal hemp. The bundles of henequen leaves are taken from the fields to cleaning mills on the plantations. There the soft parts of the leaves are cleaned off, leaving the fibers, which are then hung on wires to dry and whiten in the sun.

plantations of coffee. Some of these plantation products are exported from Vera Cruz.

**The sisal hemp of Yucatan.** On the map on pages 240-241 find the Yucatan Peninsula. Northern Yucatan has less rain than most parts of the Coastal Plain because there are no highlands near the coast to force the trade winds to give up their moisture. It happens, however, that the climate and soils are well suited to a plant called *henequen*.

The henequen plant looks much like the century plant, which you may have seen in greenhouses, and it is grown for the fibers in the long, stiff leaves. Henequen fiber is called sisal hemp, and it is used to make rope and twine. Large quantities are used in our country to make the binder twine with which harvesting machines bind the grain in bundles as it is cut. See *Figures 239 and 240*.

If you visit Yucatan, you will see miles and miles of sisal-hemp plantations. Thousands of peons work in the fields cutting the henequen leaves, and many others work in the factories preparing the fiber for export. From what seaport is sisal hemp exported?

**Mexican oil fields.** Figure 241 is a picture taken at Tampico, which is the leading seaport of Mexico. It shows how level the Coastal Plain is, and suggests one of the most important kinds of work there. The oil fields which extend along the Coastal Plain southward from Tampico are among the richest in the world, and Mexico is one of the leading oil-producing countries. Our own country is first.

It is fortunate that the oil fields are on the Coastal Plain, for the oil can be sent quickly and cheaply through pipe lines to Tampico and other ports, where it is pumped into tank steamers. Much oil is refined at Tampico, but much more is exported just as it comes from the wells. Large quantities of crude petroleum go to Atlantic and Gulf ports of the United States for refining.

**Mexican trade.** Turn to the map on pages 240-241 again and study the exports of Mexico. Select those which are products of the Coastal Plain. From what region do the others come? To what parts of the world do most of the Mexican exports go?



Among the imports of Mexico, what ones suggest that Mexico is not a great manufacturing country? What ones suggest that the Mexican people do not make so much use of their farm lands as they might?

**Our country and Mexico.** We have many business interests in Mexico because men in our country own railroads, mines, ranches, and plantations there, and because the Mexicans carry on more trade with our country than with any other. We need sisal hemp, metals, hides, and other products of Mexico, and the Mexicans need many of our manufactured goods. This trade is helpful to both countries, but it might be much greater. What the Mexicans need most is to adopt modern methods of mining, farming, and other work. Then they will have more products for trade with our country and other countries, and they will be more prosperous.

**A Mexican test.** Prove that you know some of the important facts about Mexico by giving the correct ending for each sentence below:

1. The principal kinds of work in the Mexican Plateau are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
2. Five kinds of metal ores mined in the pla-



Fairchild Aerial Surveys, Inc.

Figure 241. An oil refinery at Tampico. Petroleum for this refinery comes through pipe lines from oil fields in the Coastal Plain. What ports of our Southern States import mineral oils from Mexico?

teau and the bordering mountains are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

3. The most important of these ores is \_\_\_\_\_.
4. The leading mineral product of the Gulf Coastal Plain is \_\_\_\_\_.
5. The great plantation crop of Yucatan is \_\_\_\_\_.
6. More people live in the southern part of the Mexican Plateau than anywhere else in the country because \_\_\_\_\_.
7. The capital and largest city of Mexico is \_\_\_\_\_.
8. The leading seaport of Mexico is \_\_\_\_\_.

## II. THE COUNTRIES OF CENTRAL AMERICA

**Foreword.** The part of North America south of Mexico is called Central America, and within it are seven small countries: British Honduras, Guatemala, Salvador, Honduras, Nicaragua, Costa Rica, and Panama. British Honduras is a possession of Great Britain, but the other six are independent Spanish-American countries. Find each of the Central American countries on the map on pages 240-241.

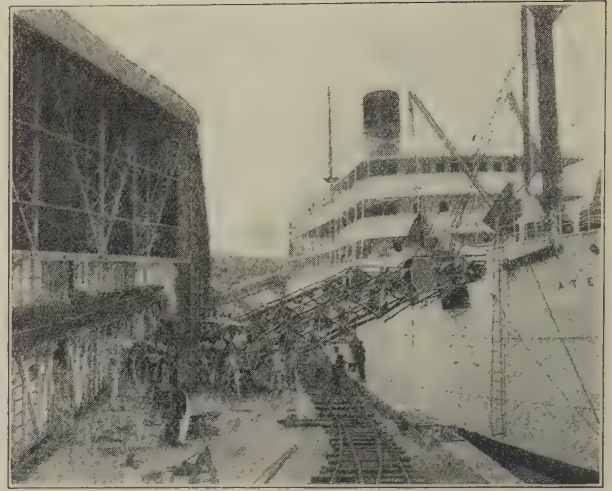
The people of Central America are largely Indians, mestizos, and negroes. The few white people are mostly of Spanish descent. Judging from the map, how do many of the Central American people get their living?

**Mountainous lands of the tropics.** The map shows that Central America is mostly mountainous. Along part of the Caribbean coast the mountains are bordered by a coastal plain, but along most of the Pacific coast they



Courtesy of the United Fruit Company

Figure 242. A small electric car loaded with bananas on a plantation. Little car lines like this run from all parts of the plantation to the main railroad line, which leads to the nearest seaport.



Courtesy of the United Fruit Company

Figure 243. Loading bananas for export. Workmen transfer the bananas from the freight cars to the loading machines, which carry the bunches, one by one, into the hold of the ship.

rise directly from the sea. The lowlands are in the *tierra caliente*, while the highlands are largely in the *tierra templada*.

The northeast trade winds bring so much rain to the eastern lowlands that they are covered with thick tropical forests, where there are many insects which carry the germs of disease. The rainfall is also heavy in many parts of the highlands, but the cooler temperatures make these regions more healthful. Most of the larger cities are in the highlands. Can you explain why?

**"Banana land."** Central America is often called "banana land" because more bananas are grown there than anywhere else in the world. On the hot, rainy lowlands bordering the Caribbean Sea thousands of acres of tropical forest have been cleared and turned into banana plantations. Many of the plantations belong to a great fruit company of the United States. Each plantation is managed by an overseer, who is a white man. The workmen are negroes, mestizos, and Indians.

Each banana plant bears one large bunch of fruit, which grows with the bananas pointing upward. After the bunch of fruit is cut

off, the plant is cut down. In a few months' time a new plant has grown up from the old root, and another bunch of bananas is ready to be cut. The bananas are always cut while they are green, for if they ripen on the plants the skins burst open and insects spoil the fruit.

The busiest time on the plantation is when word comes by radio that a "banana ship" is on its way to the nearest seaport, and will soon be there ready to take on a cargo. In order to fill the ship, as many as 75,000 bunches of bananas may be needed. The workmen start at once to cut the fruit, choosing the bunches which are in just the right condition to be shipped. As fast as the bunches are cut, other workmen load them on the backs of mules or ponies, or on little railway cars, which start at once for the main railroad. There the bananas are put in freight cars, which carry them to the port where the ship is waiting. See Figures 242 and 243.

All the Central American countries except Salvador export bananas, and hundreds of shiploads of this fruit come to the United States each year.



**Other work on the lowlands.** In some places on the lowlands there are plantations of sugar cane, coconut trees, and cacao trees, which provide work for a good many people. You will learn more about cacao when you visit South America.

Some of the people of the lowlands work in the forests, cutting down mahogany trees and other tropical hardwoods for export. Others collect chicle and other juices and gums of the tropical trees.

**Work in the highlands.** Next to bananas, coffee is the most important plantation crop of Central America, and large quantities are exported. The coffee plantations are mostly on the mountain slopes between 2000 and 4500 feet above sea level. They are owned by white people, and they provide work for large numbers of mestizos and Indians.

In the cooler parts of the highlands the people raise corn, wheat, potatoes, and other foodstuffs which we usually think of as temperate-zone crops. Parts of the highlands are covered with grass which makes excellent

pasturage, and many of the people raise cattle. In some places gold and silver are mined, but the work is done in old-fashioned ways.

**What Central America needs.** Central America has great natural resources, but, except where white men have established plantations, the resources are poorly developed. Most of the Indians, mestizos, and negroes are poor and ignorant, many are unhealthy, and few care to work hard. More white men are needed to start plantations and to fight the tropical diseases.

Another great need is railroads. As yet few railroads have been built, and most of the roads are poor. Travel is difficult, and in many places the only way of transporting goods is on the backs of men or of pack animals.

**Something to do.** From the map on pages 240–241 name (1) the Central American countries which export coffee; (2) the Central American countries which export bananas; (3) the Central American country within which the Panama Canal Zone is located.

### III. THE WEST INDIES

**Foreword.** Turn to the map on pages 240–241 and find the West Indies. Notice that these islands extend eastward from Yucatan in a great curve, forming the northeastern margin of the Caribbean Sea. The larger islands — Cuba, Jamaica, Haiti, and Porto Rico — are called the Greater Antilles, while the smaller islands, which form the eastern part of the curve, are called the Lesser Antilles. North of Cuba are the Bahama Islands. It was on one of the Bahamas that Columbus made his first landing in the New World. Find this island on the map (*K3*).

For many years after the discovery of America the Caribbean Sea was called the "Spanish Main," which means "Spanish sea." The Spanish people explored and settled

nearly all the lands bordering it, and their ships were continually crossing it on their way to and from the home country in Europe.

Little by little, Spain lost its lands bordering the Caribbean Sea, and today there are no Spanish possessions in this part of the world. Cuba and the two countries on the island of Haiti are independent. The rest of the West Indies are now possessions, not of Spain, but either of other European countries or of the United States. What ones belong to us?

On the map the possessions of Great Britain are marked (*British*) or (*Br.*); those of France (*Fr.*); and those of the Netherlands (*Dutch*). Study the map and name the country which owns the largest number of islands in the West Indies.



Courtesy of United Fruit Company

Figure 244. Some colored children of Jamaica and their houses. The houses are of wood covered with plaster, and the roofs are thatched with leaves.

As you read this section, try to find reasons why possessions in the West Indies are of value to the countries of Europe.

**Mountainous lands and tropical climate.** The Greater and Lesser Antilles are mountainous islands, but they have many fertile valleys, and the shores are bordered in many places by coastal plains. They lie between the tropic of Cancer and the equator, in the belt of the northeast trade winds. Therefore they are warm the year round, and their northeastern slopes have much more rain than their southwestern slopes. Wherever the rainfall is heavy, there is a thick growth of tropical plants and trees.

**Dangers of the islands.** The scenery of the West Indies is beautiful, and the climate of the highlands is healthful. On the other hand, the hot, moist climate of the lowlands is unhealthful, especially for white people. In Cuba, Porto Rico, and several other islands, means have been taken to get rid of disease-carrying insects, but where this has not been done dangerous fevers are common.

Sometimes the islands are shaken by earthquakes and sometimes they are swept by terrible wind-and-rain storms called *hurricanes*.

Hurricane winds are often strong enough to ruin crops, blow down houses, and wreck ships in the harbors. In the Lesser Antilles some of the highest mountain peaks are volcanoes, and at times volcanic eruptions have destroyed whole towns and villages.

**The people.** In spite of these dangers the islands are rather thickly populated. The chief reason for this is that the soils are rich and the climate is suited to the growth of many tropical products which are needed by the people of temperate lands.

The people on many of the islands are largely negroes or *mulattoes*, who are people of mixed white and negro blood. In Cuba and Porto Rico, however, more than half the people are white, chiefly of Spanish descent. On some of the islands belonging to Great Britain there are a good many English-speaking white people, but their numbers are small compared with those of the negroes and mulattoes.

The white people of the islands own most of the plantations and carry on all the more important business. Many of the negroes and mulattoes are ignorant and poor. They wear the simplest of cotton clothing and live in little houses such as you see in Figure 244. Most of them get their living by farming in a simple way or by working on plantations.

In nearly all the larger cities you can visit open market places where the colored people bring vegetables, fruits, and flowers to sell. Many of them walk to the city from their homes, carrying whatever they have to sell in baskets balanced on their heads. Others have little ponies or donkeys to carry the load, and some have small pony carts. They may have to travel several miles each way, and their sales often bring less than a dollar, but their needs are so few that a little money is all they want. See Figures 245 and 246.

In spite of being poor, most of the colored people are contented and happy, for life is easy in these tropical islands. Few clothes are





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Figure 245. West Indian women on their way to market. Could you walk several miles balancing a bundle on your head?



© Publishers' Photo Service, Inc.

Figure 246. The native market place in Kingston, the capital of Jamaica. Here the natives gather to sell their products and to buy the few things that they need.

needed, simple huts give shelter from the sun and rain, and food crops grow the year round.

**Farming and trade.** Since all the West Indies have a tropical climate, their crops are much the same. Farming is by far the most important kind of work, and the plantations produce large quantities of sugar, tobacco, coffee, and tropical fruits. Many of the plantation crops are those which cannot be grown in temperate lands or are grown only in small quantities there. For this reason the trade of the islands is mostly with the United States, Canada, and the countries of Europe, where the greatest quantities of tropical products are needed. In return for the export of plantation products the islands import many kinds of manufactured goods.

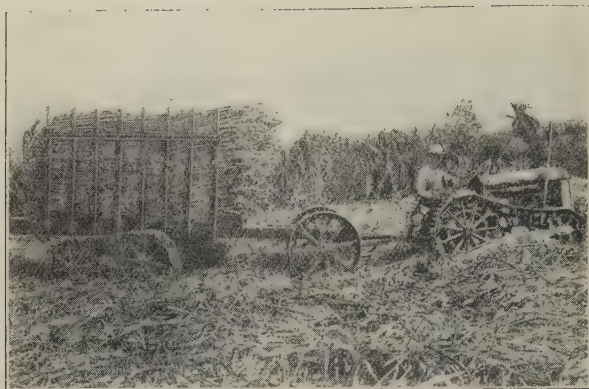
**The value of the islands.** Now you can see why the West Indies are of interest and value to the people of temperate North America and Europe. They supply tropical products to the temperate lands, and they provide valuable markets for manufactured goods. Besides this, their location makes some of them convenient stopping places for ships going from Europe or the eastern United

States through the Panama Canal to Pacific ports. For this reason there are fueling stations and naval stations on some of the islands.

**Cuba.** Cuba is the largest of the West Indies and the nearest to the United States. Our country helped Cuba to win its freedom from Spain, and has done much to help the people since they have become independent. Our doctors and health experts have taken a leading part in ridding the island of tropical diseases, and our business men have invested large sums of money in Cuban plantations. So close are the connections between the two countries that more than two thirds of the trade of Cuba is with the United States.

Cuba produces more cane sugar than any other country in the world. Sugar is grown in nearly all parts of the island, and there are many factories for the preparation of raw sugar from the cane. *See Figure 247.*

Tobacco is the second most important crop. Some of the tobacco leaf is exported to the United States, but much more is used in the manufacture of cigars and cigarettes, chiefly in the city of Habana. *See Figure 248.*



Courtesy of United Fruit Company

Figure 247. A tractor hauling a load of sugar cane to a sugar mill in Cuba. Half of all the sugar used in the United States comes from Cuba.

Because of its nearness to the United States, Cuba ships fresh vegetables to our country in the winter. Other exports of importance are pineapples, bananas, oranges, and grapefruit.

The mountains at the eastern end of the island are rich in iron ore, and the ore that is mined there is exported to the United States. The forests contain much valuable mahogany and cedar. A little mahogany is exported, and large quantities of cedar are cut for the manufacture of cigar boxes. Mining and forest work are of small importance, however, in comparison with farming.

On the map on pages 240-241 find the city of Habana (*H3*). Habana is the capital of Cuba and the largest city and chief seaport of the West Indies. Steamship lines run from this port to the United States and Europe, and a train ferry carries freight cars to Key West in Florida. Many people from our country visit Habana in winter, when the weather is delightful, and the tourist business provides work for many of the people of the city. See *Figure 249*.

**Jamaica.** If you think of Cuba as the great "sugar island" of the West Indies, you may think of Jamaica as the great "banana island." It produces more bananas than any other country in the world except Honduras,

and in most years bananas are its leading export. Other plantation products which are exported in large quantities from its seaport of Kingston are sugar and coffee. Jamaica belongs to Great Britain, but most of the people are negroes.

**Haiti.** The island of Haiti is divided into two independent countries — Haiti and the Dominican Republic. In both countries nearly all the people are negroes or mulattoes, and until recently they have not been able to set up good governments. For this reason white people of other lands have not dared to invest much money in plantations on the island, and plantation farming is less well developed here than in many of the West Indies. Sugar from the Dominican Republic and coffee from Haiti are the leading exports of the island.

**The Bahamas.** The Bahama Islands are low, and so they receive less rain than the Antilles, and have few trees. Here, as in Yucatan, sisal hemp is the principal crop grown for export. Winter vegetables are raised and are sent from Nassau to Miami, Florida, a distance of about two hundred miles. Many of the people of the islands get their living by gathering sponges from the neighboring waters and preparing them for export.



© Publishers' Photo Service, Inc.

Figure 248. Cigar-makers at work in a factory in Habana. Large quantities of cigars are exported from Habana to the United States every year.

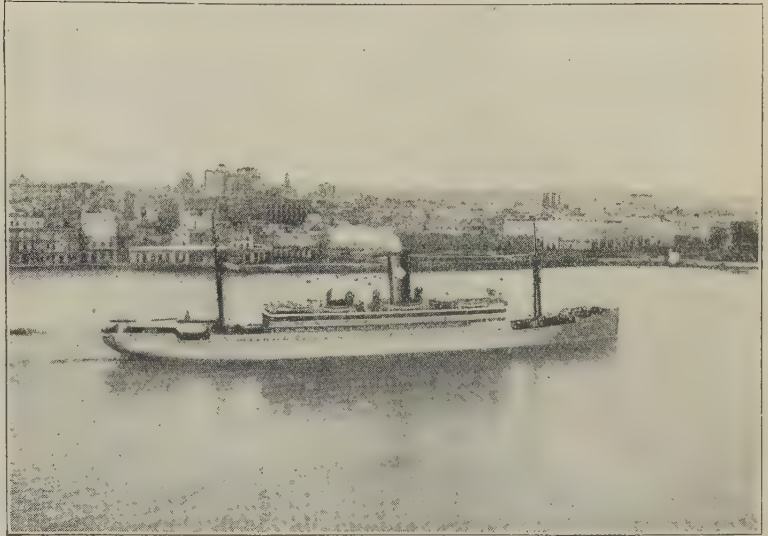


**The Bermuda Islands.** On the map on pages 240–241 find the Bermuda Islands (*M1*). They are not in the West Indies, but they are far enough south to have warm winters. They are a great winter playground for people from the United States and Canada, and the entertainment of visitors is the most important kind of work.

The islands belong to Great Britain and are used as a naval and fueling station for British ships. The people raise large quantities of onions, potatoes, and winter vegetables, which are shipped to the United States.

**A ship test.** The ships described below are steaming northward from southern parts of North America to seaports on the Atlantic and Gulf coasts of the United States. Tell where each one has come from. You may use the map on pages 240–241 as a help in this test.

1. From the largest island of the West Indies, loaded with raw sugar.
2. From a part of Mexico, loaded with sisal hemp.
3. From the Central American country between Guatemala and Nicaragua, loaded with bananas.
4. From a possession of the United States in the West Indies, loaded with tobacco.
5. From the leading seaport of Mexico, loaded with crude petroleum.
6. From a British possession in the West Indies, loaded with bananas.
7. From an independent country in the West Indies, loaded with iron ore.
8. From a Central American country, loaded with mahogany.
9. From a British possession north of the West Indies, loaded with potatoes and onions.
10. From a Central American country bordering Mexico, loaded with coffee.
11. From the second most important port of Mexico, loaded with bars of silver and gold.



Courtesy of United Fruit Company

Figure 249. A ship leaving the harbor of Habana for the United States. The boat trip from New York to Habana takes four days, while the trip from Key West to Habana takes only eight hours.

**Placing countries.** Below is a list of all the independent countries of southern North America except Mexico. Write their names in two lists, heading one list "Countries of Central America," and the other "Countries of the West Indies." When you have finished, check your lists by the map to see if they are correct.

|                    |           |           |
|--------------------|-----------|-----------|
| Costa Rica         | Guatemala | Nicaragua |
| Cuba               | Haiti     | Panama    |
| Dominican Republic | Honduras  | Salvador  |

**Giving reasons.** Complete each sentence below by giving the correct reasons for the fact which it states :

1. Mexico, Cuba, and the countries of Central America are called Spanish-American countries because .....
2. Mexico and the Central American countries have not made such great use of their natural resources as the United States and Canada have because .....
3. People from temperate countries in North America and Europe have opened plantations in southern North America because .....
4. Possessions in the West Indies are of value to the United States and countries of Europe because .....

Turn over to page 252.

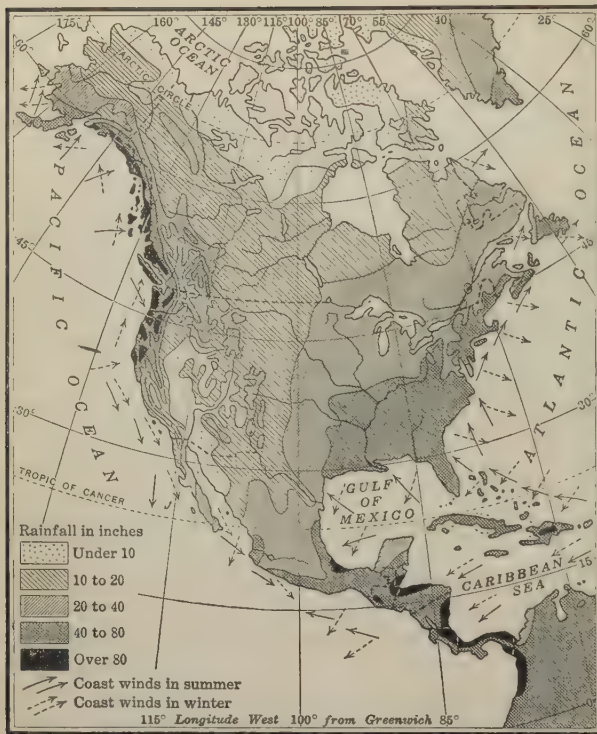


Figure 250. Distribution of rainfall in North America.

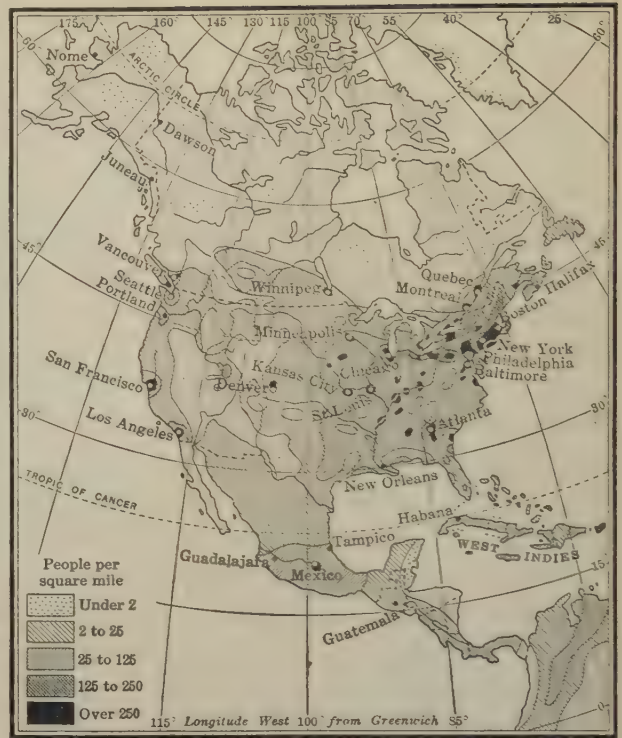


Figure 251. Distribution of people in North America.

## MAP STUDIES

*Group I*

1. Trace the boundary between Canada and the United States from west to east across the map on the opposite page. 2. What mountains on the Pacific coast of our country extend northward into Canada? 3. What does Figure 250 show about the rainfall in this region compared with the rainfall in other parts of Canada? 4. What do you expect to see growing on the mountain slopes? 5. What other mountains of the West extend northward into Canada? 6. Find the Northern Interior Plateau of Canada. 7. Of what regions in the United States does its location remind you?

8. What two regions of plains in the United States extend northward into Canada? 9. What use do you think the Canadians make of their interior plains? 10. Find the Laurentian Upland of Canada. 11. What part of that upland is in the United States? 12. Find the part of the Appalachian Highlands in Canada. 13. Is Canada's share of this region mostly hilly or mostly mountainous?

*Group II*

1. Trace the tropic of Cancer across Mexico. 2. What part of Mexico is in the temperate zone? in the torrid zone? 3. Notice that Mexico is made up largely of natural regions which are southward extensions of the Western mountains and plateaus of the United States. 4. What peninsula of Mexico is a southward extension of the Coast Ranges of California? 5. What two regions are southward extensions of our Western plateaus? 6. What river forms part of the boundary between our country and Mexico?

7. What kind of land borders the Mexican Plateau on the east, south, and west? 8. Do you expect to find the Mexican Plateau a region of heavy rainfall or of light rainfall? Why? 9. Look at Figure 250 and see if your answer to question 8 was correct. 10. What kind of land borders the eastern coast of Mexico? 11. Of what natural region of our country is this coastal region a southward extension? 12. What peninsula forms the broadest part of the Coastal Plain in Mexico? 13. As a whole, is Mexico mostly a country of highlands or of lowlands?





## A REVIEW OF NORTH AMERICA

**A map test.** On an outline map of North America print these names in the correct places, doing the work from memory :

|                      |                   |
|----------------------|-------------------|
| Atlantic Ocean       | Alaska            |
| Pacific Ocean        | Canada            |
| Arctic Ocean         | Newfoundland      |
| Bering Sea           | Labrador          |
| Hudson Bay           | United States     |
| Gulf of St. Lawrence | Florida Peninsula |
| Gulf of Mexico       | Mexico            |
| Caribbean Sea        | Lower California  |
| Gulf of California   | Yucatan Peninsula |
| Great Lakes          | Central America   |
| St. Lawrence River   | West Indies       |
| Mississippi River    | Cuba              |
| Rio Grande           | Isthmus of Panama |

When you have finished, check your map by the map on page 251, and correct any mistakes you may have made.

**A matching test.** Each place named in the left column below is the capital of one of the countries named in the right column. Match the capitals with the countries.

|             |               |
|-------------|---------------|
| Habana      | Canada        |
| Mexico City | Cuba          |
| Ottawa      | Mexico        |
| St. John's  | United States |
| Washington  | Newfoundland  |

**Naming leaders.** The leading country of the world in the production of each of the crops and minerals listed below is in North America. Name the country that leads in the production of each.

|          |            |
|----------|------------|
| asbestos | petroleum  |
| bananas  | silver     |
| corn     | sisal hemp |
| cotton   | sugar      |
| nickel   | sulphur    |

**Questions to answer.** 1. In what part of North America do the Eskimos live?

2. What countries of North America have large numbers of English-speaking people?

3. What countries of North America have large numbers of Spanish-speaking people?

**Comparing our country with its neighbors.** Each blank in the following sentences is to be filled with the name of one of these countries: Canada, the United States, Mexico. Write the sentences, filling the blanks correctly. This will help you to make some interesting comparisons.

1. The largest of these three countries is -----.

2. The one with the largest number of people is -----.

3. The one that is entirely within the temperate zone is -----.

4. The one that extends northward beyond the arctic circle is -----.

5. The one that is partly in the temperate zone and partly in the torrid zone is -----.

6. Rugged mountains and high plateaus form the western part of ----- and ----- and make up nearly all of -----.

7. The most densely populated part of this rugged highland region is in the torrid zone of ----- Give reasons for this.

8. The two countries which share the Central Plains and the Great Plains are ----- and -----.

9. The two countries which share the Gulf Coastal Plain are ----- and -----.

10. The northern part of the plains of ----- is too cold for farming. Explain why.

11. Of the three countries, ----- is the greatest farming country because it has the largest stretches of plains and because nearly all parts of the plains are well suited to farming.

12. Of the three countries, the one which raises tropical crops is ----- Explain why.

13. In ----- and ----- more people live in the plains than in the highlands. Give reasons for this.

**Some things to explain.** 1. Of the three classes of imports and exports (foodstuffs, raw materials, and manufactured goods), what two do the countries of southern North America export to the United States? Explain why our country provides a good market for such products.

2. Of the three classes of goods, what one do the countries of southern North America import most largely from the United States? Give reasons for this.





## SOUTH AMERICA

Scale of miles

0 200 400 600 800

Water less than  
500 feet deep

Floating ice

Grasslands and  
cultivated areas

Temperate forests

Tropical forests

Semideserts, deserts, and  
barren mountain slopes



# SOUTH AMERICA

## I. THE LAND AND THE PEOPLE

### 1. FOREWORD

**Exploration and settlement.** Have you ever read stories of Cortez, who conquered Mexico? of Pizarro, who conquered a great Indian empire in South America? of Balboa, who crossed the Isthmus of Panama and discovered the Pacific Ocean? These men were three of the great Spanish explorers and conquerors who won for Spain the southern part of North America and much of South America after Columbus discovered the New World.

For a long time the lands that the Spanish settled were colonies of Spain. Then, one by one, they gained their freedom from Spain and became independent countries. Today there are nine Spanish-American countries in South America. In these countries the people speak the Spanish language.

But in Brazil, the largest country of South America, the people speak the Portuguese language. Perhaps you can guess why. Portugal and Spain are neighboring countries of Europe, and in the time of Columbus the Portuguese, as well as the Spanish, were great explorers. Six years after Columbus's first voyage a Portuguese sea captain named Vasco da Gama reached India, in Asia, by sailing southward round the southern end of Africa. Two years later Cabral, another Portuguese captain, set out for India by the same route. Sailing too far west, he landed on the coast of what is now Brazil, and claimed it for Portugal. Later the Portuguese explored and settled Brazil, and made it a Portuguese colony. Today Brazil is an independent country.

**Countries which have grown slowly.** Long before the English settled in North America there were good-sized Spanish and Portu-

guese settlements in South America. Yet in spite of an earlier start the South American countries have grown more slowly than has the United States. In many of them most of the people still live near the seacoast much as the people of our country did a hundred and fifty years ago. Many parts of the continent have no railroads, and some parts have never been fully explored.

**The continent of opportunity.** As a whole, South America is thinly populated, and there are vast stretches of land suitable for plantations, farms, and pastures which have not yet been used. Farming, stock-raising, and mining have been carried on since the earliest days of settlement, but much more could be done. People often call South America "the continent of opportunity" because there is a chance for many more people to make a good living there.

We are especially interested in the continent of South America because it is nearest our own, and because we carry on much trade with the people there. Many of our business men have invested money in South American mines, plantations, and ranches, and in that way we are taking part in the development of the resources of the continent.

**Some problems.** As you study about the South American countries, try to find reasons why they have not grown so fast as the United States. Try also to decide which countries are likely to grow the fastest in the future, and why.

**Map studies.** On the map on pages 304-305 find Spain and Portugal (*J2-3*). Trace Vasco da Gama's route to India. Then find the parts of South America which the Spanish and the Portuguese explored.



Figure 252.† Mount Illimani, an old volcanic peak in the Andes. Illimani is in the torrid zone, but it is so high that its summit is covered with snow fields and

glaciers. Find this peak on the map (pp. 276–277, C5). How does it compare in height with Mount Popocatepetl in Mexico and Mount Whitney in California?

## 2. GETTING ACQUAINTED WITH SOUTH AMERICA

Here are some questions which anyone who is acquainted with South America can answer. Can you answer them?

1. What are the highest mountains in South America, and where are they?

2. What plains in South America are like the Great Plains of the United States?

3. What part of South America should you visit if you wanted to explore a tropical forest?

4. What part of South America should you visit to enjoy summer weather at Christmas time?

**Some comparisons between the Americas.** Turn to the map on pages 300–301 and compare the shape of North America and South America. Notice that they are both widest at the north and that they grow much narrower toward the south. On the map find the equator, the tropic of Cancer, and the tropic of Capricorn. What part of North America is between the tropics? Is that the wider part of the continent or the narrower part? What part of South America is between the tropics?

Is that the wider part or the narrower part? Which continent, then, has the greater area of tropical lands?

You will remember that as you go northward from the equator in all parts of the earth the climate gradually becomes cooler. When you reach the tropic of Cancer, you leave the torrid zone and enter the north temperate zone. The climate changes in the same way as you go southward from the equator. On such a trip, what zone do you enter as you cross the tropic of Capricorn? What part of South America is in the south temperate zone?

Study the map again, and decide which of the two Americas has the greater area of temperate lands. You have learned that white people find it hard to live and work in the hot, tropical lands. Which of the two Americas has more land where the climate is suited to people of the white race?

**Where Christmas comes in the summer time.** You know that in the torrid zone the people do not speak of winter and summer because the weather is warm the year round.





Courtesy of Joseph T. Singewald, Jr.

**Figure 253.** A native house on the Amazon River in Brazil. The picture shows how the thick tropical forest of the Amazon Lowlands looks from the river.

You also know that in the north temperate zone, where you live, the winter months are December, January, and February, and the summer months are June, July, and August. In the south temperate zone the seasons are just the opposite of ours. There June, July, and August are the winter months, and December, January, and February are the summer months. Children who live in the southern part of South America have Christmas on December 25 just as you do; but their Christmas comes in the summer.

**Map work.** Now turn to page 256 and work out the map studies there.

**More comparisons.** The map shows that the natural regions of South America are arranged somewhat like those of North America. The Andes Mountains, in the west, are a southward extension of the young, rugged mountains of western North America. They are higher than the mountains of our own continent, — so high that even in the parts near the equator some of the peaks are covered with snow and ice the year round.

The Brazilian Highlands, in the east, and the Guiana Highlands, in the north, are



Courtesy of the Pan American Union

**Figure 254.** Cattle on the treeless Pampa of Argentina. Of what region in the United States does the Pampa remind you? Why are there no trees here?

old, worn-down mountains like some of the highlands of eastern North America, and are very much lower and less rugged than the Andes. Judging from what you have learned about the mountains in North America, what kinds of work do you expect to find the people doing in the Andes? in the Brazilian Highlands?

In South America, as in North America, the young, rugged mountains of the west are separated from the old, worn-down mountains of the east by lowlands and interior plains. Only in the southern part of South America, however, are the plains like those of North America. The great Amazon Lowlands in the north are covered with tropical forests because they are hot and moist the year round. Why are the interior plains of North America so different from the Amazon Lowlands?

Farther south, in temperate South America, the plains are more like those in the United States. Why? The Pampa is a level grassland, and is like our Great Plains in many ways. What kinds of work do you suppose the people do there?

*Turn over to page 258.*

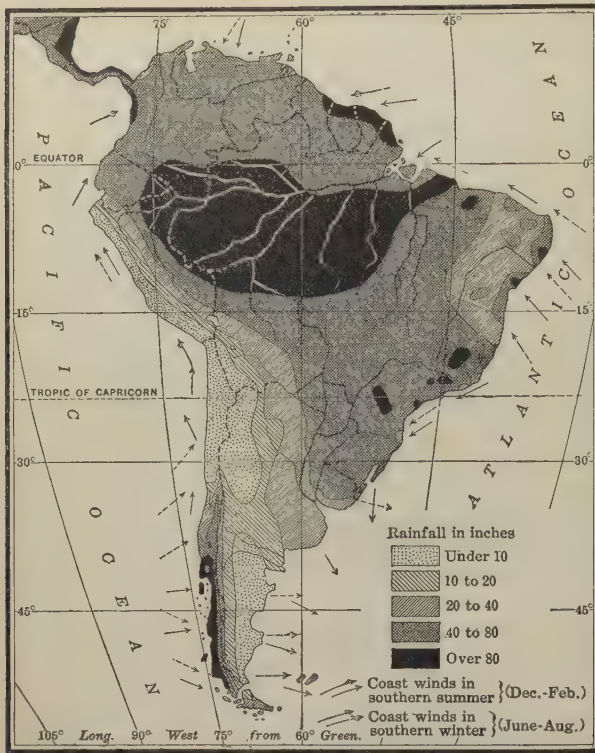


Figure 255. Distribution of rainfall in South America.



Figure 256. Distribution of people in South America.

### MAP STUDIES

**Foreword.** Like North America, South America is made up of a number of great natural regions. The differences in surface and climate between these regions have much to do with the ways in which the people live in different parts of the continent. In working out the map studies below you will discover some interesting things about the regions of South America.

1. On the map opposite find the Andes Mountains. Notice that they extend all the way from north to south in the western part of South America. 2. What kind of mountains are they? 3. In what part of North America are there mountains of the same kind? *Study Figure 252.*

4. Find the Brazilian Highlands on the map. 5. In what part of South America are they? 6. What kind of mountains are they? 7. How do they compare in height with the Andes? 8. Find another region of old, worn-down mountains in South America. What are they called?

9. Find the Amazon Lowlands on the map. 10. What great river flows from west to east

through these lowlands? 11. Into what ocean does it flow? 12. Notice how many tributaries the Amazon has. From what higher regions surrounding the Amazon Lowlands do they come? All the land drained by the Amazon and its tributaries is known as the Amazon Basin.

13. In what zone are the Amazon Lowlands? 14. What does that tell you about the climate there? 15. What else can you tell about the climate from Figure 255 above? 16. Since the Amazon Lowlands are hot and rainy, what do you expect to find growing there? Check your answer by the map opposite page 253 and by Figure 253.

17. Find the Paraná Lowlands on the map. 18. Do you expect the Paraná Lowlands to be warmer or cooler than the Amazon Lowlands? Why? 19. Find the Pampa, which extends southward from the Paraná Lowlands (C6). 20. In what zone is this plain? 21. About how much rain falls in the Pampa? 22. Do you expect the Pampa to be forested? Check your answer by the map opposite page 253 and by Figure 254.





**The people of South America.** You will remember that many of the early settlers in Mexico and Central America married native Indians. The same thing happened in South America, and for that reason large numbers of the South Americans are *mestizos*, or people of mixed white and Indian blood. Many of the mestizos are poor and ignorant, but there are many others who are well educated and who hold important positions in government and business.

There are still many pure-blooded Indians left in South America, — many more than in North America. In the warmer parts of the continent there are also a good many negroes and people of mixed Indian and negro blood.

In some of the South American countries most of the people are white. Many of them are descendants of the early Spanish and Portuguese settlers, but there are large numbers who have come to South America more recently. Among them are people who have come from Spain, Portugal, Italy, Germany, and other European countries, or whose parents or grandparents came from there.

Although there are white people in all the South American countries, the greatest numbers are in the southern, or temperate, part

of the continent. This is the part where most of the newer settlers from Europe have chosen to make their homes. Can you explain why?

**A check.** Turn back to page 254, and see if you can now answer the four questions there.

**Proving your acquaintance with South America.** Prove that you are getting acquainted with South America by giving the right words to fill the blank spaces in the sentences below :

1. The greater part of South America is in the ----- zone.
2. The southern part of South America is in the ----- zone.
3. In temperate South America summer begins in the month of -----, and winter begins in the month of -----.
4. The Andes Mountains are young and rugged like the ----- Mountains of North America.
5. The great Amazon Lowlands are in the ----- zone of South America, and are covered with tropical -----.
6. The great plain known as the Pampa is in the ----- zone of South America.
7. The Pampa has too little rain for the growth of -----.

**Special credit work.** On an outline map of South America draw and color the natural regions of the continent.

## II. TROPICAL SOUTH AMERICA

**Foreword.** Turn to the map on pages 276–277, and name the South American countries which are wholly, or almost wholly, north of the tropic of Capricorn. These are the tropical countries of South America. Through what three of them does the equator pass? What five of them share the great Amazon Lowlands? What five share the Andes Mountains?

You have already learned that tropical lowlands are warm the year round, while tropical highlands are much cooler. For this reason, and because of differences in surface

and rainfall, the life and work of the people in various parts of tropical South America depend largely on the natural regions in which they live.

Think what you have learned about the work of the people in the different natural regions of Mexico and Central America, and then make a list of the kinds of work that you think you are likely to find going on in the highlands and lowlands of tropical South America. Keep your list until you have finished studying this chapter, and then see how nearly right you were.



## 1. BRAZIL—GIANT OF SOUTH AMERICA

Brazil is often called the "giant country" of South America because it is nearly as large as all the other South American countries added together. It is a giant country of the world too, for only Canada, the United States, and two others are larger. Even our own country is smaller than Brazil if we leave out Alaska.

In spite of its great size, Brazil has only about a third as many people as the United States. Vast stretches of the interior of the country are very thinly populated, and most of the people live in a belt a few hundred miles wide along the coast. As you study this section, find reasons why Brazil is so much less densely populated than the United States.

**In the heart of the Amazon Lowlands.** Try to imagine that you have stepped into an airplane and have flown from your home to Manáos, in Brazil. You are now in the heart of the Amazon Lowlands, nearly a thousand miles from the Atlantic Ocean. Find Manáos on the map on pages 276–277 (C4). Notice that in spite of its distance from the ocean it is a seaport. What great river makes it possible for ocean ships to reach Manáos? Study Figure 257.

**The tropical forest.** Try to picture to yourself the great tropical lowland in which Manáos is located. It is a vast plain, warm the year round because it is low and near the equator, and having so much rain that it is covered with thick tropical forests. The trees are of many different kinds, and in places they grow so close together that their branches intertwine overhead, shutting out much of the sunlight. Vines with bright-colored flowers climb the tree trunks and form loops from one tree to another. Parrots and other gor-



Alexander Hamilton Rice Expedition

**Figure 257.** An airplane view of Manáos, Brazil's inland seaport on the Amazon River. Manáos has about 75,000 people. The picture shows that it has broad streets, electric-car lines, and many fine buildings. The large building in the center is a theater.

geously colored birds fly from tree to tree, and troops of monkeys chatter to one another as they swing from limb to limb.

In many places the undergrowth of bushes and plants is so thick that it is hard to cut a path through the forest. Think how hard it must be to build a road or a railroad through such a region. Turn to the map on pages 276–277, and notice how few railroads there are in this great tropical forest.

**The Amazon River.** The great highway of travel and transportation through this lowland region is the Amazon River. It rises in the Andes, where it is known as the Marañon River. On the map on pages 276–277, find Iquitos on the Marañon River in Peru (B4). Iquitos is 2300 miles from the mouths of the Amazon, yet ships from the ocean can reach its wharves. Trace the Amazon downstream from Iquitos to the Atlantic Ocean, and notice how many navigable tributaries join this great river from the north and south. This will show you that the Amazon and its tributaries form a network of navigable waterways by means of which people can travel by boat to nearly all parts of the lowlands.





Courtesy of Joseph T. Singewald, Jr.

**Figure 258.** Amazon Indians in a "dugout" canoe which they have made by hollowing out a large tree trunk. In canoes of this kind the Indians often travel long distances on the rivers.

The Amazon is one of the longest rivers in the world, and it carries more water to the ocean than any other river. With its tributaries, it washes so much mud and sand from its basin that it makes the ocean water muddy for a hundred miles or more beyond its mouths.

**Rain and floods.** The people of the Amazon Lowlands divide the year into two seasons, which they call the rainy season and the dry season. The rainy season comes at different times in different parts of the lowlands, but while it lasts there is rain nearly every day. When the people speak of the "dry season," they do not mean a season without any rain, but simply the six months when it rains much less than in the rainy season.

During the rainy season the rivers rise and overflow their banks, and the waters spread out over miles and miles of the low-lying land, forming vast shallow lakes. For this reason houses close to the rivers are often built on posts so that they will be above the water in the flood season. *See Figure 253.*

**Reasons for the heavy rainfall.** You will remember that the *northeast trade winds* of the Northern Hemisphere bring rain to the eastern slopes of the mountains in Mexico, Central America, and the West Indies. There

are winds of the same kind in the Southern Hemisphere, but they blow from the southeast toward the equator. They are called the *southeast trade winds*, and they bring rain to the Amazon Lowlands. *See Figure 150.*

Near the equator the northeast trade winds and the southeast trade winds meet in a calm belt called the *doldrums*. In this belt the moist air rises high above the earth's surface, and as it rises it cools and gives up much moisture. That is another reason why the

Amazon Lowlands have so much rain.

**A thinly settled region.** Figure 256 shows that most of the people of the Amazon Lowlands live along the Amazon River and the two tributaries that join it near Manáos, and that even there the population is not dense. Few white people have moved into this region because the hot, moist climate is uncomfortable and, oftentimes, unhealthful. In the towns and villages along the rivers there are many mestizos, but the people who live in the deep forest are mostly native Indians. They wear few clothes, and their houses are little huts made of wood.

The Indians get their food by catching fish and turtles in the rivers, hunting wild animals, and gathering fruits and nuts which grow wild in the forest. Some of them have little gardens where they raise a few vegetables. *See Figure 258.*

**Two Amazon cities.** Now that you know more about the Amazon Lowlands, are you wondering why as large a city as Manáos has grown up in the heart of this tropical region? A visit to the wharves along the river front will show you the reason. There you will see ocean ships loading big balls of rubber for export. The rubber tree grows wild in the Amazon Lowlands, and rubber is the only



important export of the region. Manáos is the great inland center for the collection and shipment of rubber.

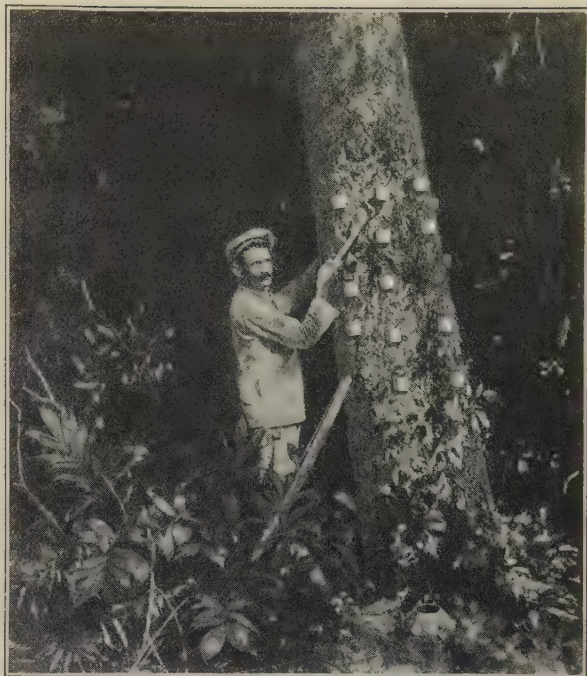
At the mouth of the Amazon is another city which owes its growth chiefly to rubber. This is Belem, the ocean gateway into the Amazon Lowlands and the leading seaport of northern Brazil. Find Belem on the map on pages 276-277 (E4). What other products are exported from there?

**Rubber-gathering.** The men who gather the rubber are Indians and mestizos who live in little huts in the forest. Sometimes a rubber-gatherer lives all by himself, but more often several live in the same place.

When the rubber-gatherer starts out for work in the morning, he carries a small hatchet and a supply of tin cups. Following a narrow path through the forest, he soon reaches the first rubber tree. With his hatchet he cuts several grooves in the bark and hangs a cup at the lower end of each one.

Almost as soon as the groove is cut, a white juice which looks somewhat like cream begins to ooze out of the tree and drips slowly into the cup. This juice is called *latex*. As soon as the rubber-gatherer has "tapped" one tree to start the latex flowing, he walks on through the forest to the next tree on his path. The path has the form of a loop, starting from his hut and leading back to it. By noon he has tapped all the trees and is back home. See Figure 259.

In the afternoon the rubber-gatherer starts out again, this time carrying a large bucket. Following the path from tree to tree, he pours the latex from the tin cups into his bucket. When he gets home again, his bucket is full. Near his hut he builds a fire of sticks and palm nuts. Over the blaze he places a metal cone with the small end up so that the smoke will pass through it. On each side of the fire is a post with a forked end. These forked posts support a strong pole, much as the goal



Courtesy of U. S. Rubber Company

**Figure 259.** A rubber-gatherer tapping a rubber tree. The rubber trees are scattered widely through the forest, and the gatherer has to walk several miles each day to tap the trees and collect the latex.

posts on a football field support the crossbar, but the pole rests loosely between the forks so that it can be turned over and over.

Taking a cupful of latex, the rubber-gatherer pours it over the middle of the pole just above the smoke, turning the pole as he does so. The heat and smoke harden the latex, forming a coating around the middle of the pole. Cup after cup of latex is poured on the slowly turning pole until a ball of hardened rubber has been formed. When the ball is a foot or more through the middle, it is pulled off the pole and a new one is started.

The work of gathering the rubber and hardening it into balls goes on in the forest from November until May, for that is the time when the latex flows best. By the end of the season the rubber-gatherers have a large number of big balls ready to be sent to Manáos or Belem for export to distant lands. See Figure 260.





Courtesy of Joseph T. Singewald, Jr.

Figure 260. Balls of rubber piled on a river bank in the Amazon Lowlands. A steamer or a launch will stop here to get the rubber and carry it to Manáos or Belem for export to distant lands.

**Rubber plantations.** Most of the rubber from the Amazon Lowlands comes from the wild trees, but in a few places rubber plantations have been started. Here the trees are set out in rows on land cleared for the purpose, and natives are employed to care for them. Gathering the latex on the plantations is much easier than in the thick forests where the rubber trees are so far apart.

**Other kinds of work.** Some of the people of this region make a business of gathering Brazil nuts, which grow wild in the tropical forest. Large quantities of these nuts are exported to the United States, where many are sold in fruit stores and grocery stores, and many are used for making vegetable oil.

In the eastern part of the lowlands, near Belem, there are plantations of cacao, sugar cane, and other tropical crops, but this is the only section where farming is of any importance. There are vast stretches of land that might perhaps be cleared and used for tropical crops, but this will not be done until many more white people come to live in the region and more railroads are built.

There is less lumbering than you might expect in this region, because the trees that are good for lumber are widely scattered, and the forests are so thick that it is hard to get the logs out. Furthermore, the great markets for lumber are far away in Europe and North America, and it is very expensive to ship lumber so far.

At present rubber is the one great product of the Amazon Lowlands. Even so, this region produces only a small part of the world's supply of this important raw material. Most of the rubber for the factories in our country and Europe comes from southeastern Asia, where it is produced more cheaply on great plantations.

***Making comparisons.*** In reading about the Amazon Basin have you thought how different it is from the Mississippi Basin in the United States? Sum up some of the differences by arranging the phrases below in two lists. Head one list "Sights in the Amazon Basin," and the other "Sights in the Mississippi Basin."

Tropical forests  
Fields of corn, wheat, and cotton  
Ocean ships loading rubber  
Coal mines and oil fields  
Many railroads  
People traveling in dugout canoes  
Monkeys and parrots in the trees  
Many large cities  
Many factories  
Boatloads of Brazil nuts

**The eastern coastal plain.** On the map find the coastal plain which borders the Brazilian Highlands on the north and east. This plain is warm because it is in the tropics, but it is not so uncomfortably hot as many parts of the Amazon Lowlands because the trade winds blow over it from the ocean. Since these moist winds must rise to cross the Brazilian Highlands, the eastern slopes of the mountains and the bordering coastal plain have a considerable amount of rain.



The Portuguese made their first settlements along this coastal plain, and today it is one of the most thickly populated parts of Brazil. The map on pages 276-277 shows that the coastal plain, with the neighboring part of the highlands, is a land of cotton, sugar cane, and cacao, and that these tropical crops are the leading exports. The cotton fields and the sugar plantations look much the same as those which you have seen in other warm lands.

**Cacao plantations.** If you like chocolate and cocoa, you will enjoy visiting a cacao plantation. The cacao trees are planted in rows on the plantations, and if you make your visit at the harvest season you will see great pods six to nine inches long hanging from the trunks and limbs. Men with sharp knives cut the pods from the trees and pile them in heaps on the ground.

A day or two later men, women, and children are busy "shelling" the beans. This means cutting open the pods and taking out the seeds, or beans, which are covered with pulp. The beans are light-colored, and there are often as many as thirty or forty in one pod. The fresh beans are put into boxes and heated to soften the pulp, so that it will come off easily, and to improve the flavor of the cacao. At the end of a few days the beans are spread out to dry in the sun. While they are drying they are raked and stirred until all the bits of pulp are removed and the beans have a brownish, polished appearance. Then they are packed in sacks, ready to be shipped away. See Figure 261.

**Two important ports.** Nearly all the larger cities of the coastal plain are seaports of some importance, but the two great leaders are São Salvador and Recife. At both of these ports you can see ships from distant lands unloading manufactured goods and taking on great quantities of plantation products. Find Recife and São Salvador on the map on pages 276-277 (F4-5), and name their exports.



Underwood & Underwood

Figure 261. Work on a cacao plantation. Find two people who are shelling cacao beans, and two others who are stirring the beans that are drying in the sun.

**The Brazilian Highlands.** The Brazilian Highlands are made up of many mountain ranges which run from northeast to southwest. The highest range is on the east, and it rises so steeply from the coastal plain that it has been hard to build railroads inland from the coast. For this reason it was a long time before many settlements were made in the highlands, and even now the greater part of the region is not thickly populated.

The eastern margin of the mountains gets much rain from the trade winds, but farther inland, especially in the north, the rainfall grows less, and much of the highland region is a *savanna*, or tropical grassland. Tropical grasslands do not make such good pasture lands as temperate grasslands because the grass withers and dries in the hot sun, and there are many insects which cause diseases among the cattle. Nevertheless, many parts of the Brazilian Highlands are used for raising cattle, and hides and meat are exported.

The parts of the highlands that have the most people are the agricultural sections near the coast. What plantation products of the northeastern part of the highlands are exported from São Salvador?





Figure 262. Rio de Janeiro as it looks from an airplane flying at a height of half a mile. Notice how the city spreads over the level land between the hills and

mountains. The nearest mountain at the right overlooks the entrance to the harbor, and is called "Sugarloaf." What makes the harbor of Rio safe for ships?

**Brazilian mines.** On the map on pages 276–277 find the part of the Brazilian Highlands where mining is important. Gold and diamonds have been mined in this part of Brazil for more than three hundred years. At present, however, the most important mineral product is manganese, which is used in the making of steel. Large quantities of manganese ore are exported to the United States.

Brazil has millions of tons of high-grade iron ore, but at present very little is mined. One reason for this is that our country and the countries of Europe, which need the most iron ore, get their supplies from places near at hand. Another reason is that Brazil has no good coking coal for smelting iron ore.

**Rio de Janeiro.** On the map on pages 276–277 find Rio de Janeiro, the capital of Brazil (E6). Notice that it is located on a part of

the coast where the Brazilian Highlands rise directly from the sea. The city has grown up on the south side of the Bay of Rio de Janeiro, which forms one of the best harbors in the world. The bay extends fifteen miles inland from the sea, and the surrounding mountains protect it from winds and storms.

Rio, as the city is commonly called, has more than a million people, and is the largest city in Brazil and the second largest in South America. It has broad, smoothly paved streets shaded by palms and other tropical trees, fine business buildings, and beautiful homes surrounded by lovely gardens. There are many public parks, and a broad boulevard runs along the shore of the bay for many miles. At night, when the electric lights are turned on, people call this boulevard "Rio's sparkling necklace." See Figure 262.





From Ewing Galloway, N. Y.



From Ewing Galloway, N. Y.

**Figure 263.** Picking coffee in Brazil. Boys and girls often help to pick the coffee berries from the trees.

**Figure 264.** Raking coffee beans into piles in a drying yard on a plantation near São Paulo. In the distance you can see a hillside entirely covered with rows of coffee trees.

Along the water front is a stone quay, or wharf, several miles long. The quay is a busy place, for ships are always coming and going, bringing passengers and freight from distant lands and carrying Brazilian products to far-away parts of the world. What are the principal exports of Rio?

Of all the seaports of Brazil, Rio is the most important, and it is also the leading business and manufacturing center of the country. As a whole, Brazil is not a great manufacturing country, but at Rio you can visit factories where clothing, hats, shoes, cotton goods, furniture, leather, paper, and many other things are manufactured.

One reason why Rio has become the leading city of Brazil is its wonderful harbor. Another is that it is an ocean gateway for the most densely populated and most prosperous part of Brazil. Do you know what has made this part of the country so prosperous?

**"Coffee Land."** Turn to the map again, and find the city of São Paulo and the seaport of Santos, southwest of Rio. Notice how many railroads run inland from these cities. This southeastern part of the Brazilian Highlands is often called "Coffee Land." Three

fourths of all the world's coffee is raised here, and coffee has brought much wealth to the people. Any one of the railroads that run inland from São Paulo will take you through miles and miles of coffee plantations where millions of coffee trees cover the hillsides.

Harvest season on the Brazilian coffee plantations begins in May and lasts until October. During that season you will see the plantation workers gathering the ripe, red berries from the trees. The berries look somewhat like red cherries, and each one contains two seeds, or "beans," buried in soft pulp. *See Figure 263.*

After the berries have been picked, there are several ways of preparing the coffee for market. One way is to spread the berries out on drying floors to dry in the sun. This takes two or three weeks, and from time to time the berries are stirred with rakes so that they will dry evenly. *See Figure 264.*

After the drying, the berries are put through machines which remove the dried skin and pulp and clean and polish the beans. When the beans are finally ready to be sold, they are packed in large bags and sent to Santos or Rio for export.



Figure 265. A public park in São Paulo. Broad, smoothly paved streets, beautiful parks, and fine buildings show that coffee has brought much wealth to this Brazilian city.

One reason why so much of the world's coffee is raised in this part of the Brazilian Highlands is that the climate and soil are just right for the best growth of the coffee plant. Another is that coffee-growing made an early start here just as cotton-growing did in our own Southern States, and as yet no other part of the world has caught up with Brazil in coffee production.

**Other work in "Coffee Land."** For many years the people of this region raised little else than coffee, but they have found that it is not wise to depend so largely on one crop. Today they raise corn, beans, rice, and potatoes for food, and cotton for the manufacture of clothing. Cattle are raised and sent to meat-packing plants in Rio and São Paulo, and meat and hides are important exports.

**São Paulo and Santos.** São Paulo has more than half a million people, and it is often called "the capital of Coffee Land" because it is the great railroad and business center of the coffee-growing district. Like Rio, it is a manufacturing city, with textile mills, shoe factories, hat factories, and many other manufacturing plants. See Figure 265.

Santos has grown up on the coast as a seaport for the export of coffee and other products of the neighboring highlands. It is a busy city, but it is smaller than São Paulo because it is on lower land and is a hotter and less comfortable place in which to live.

**The great interior.** North of the tropic of Capricorn and west of the Brazilian Highlands is the part of Brazil which is called "the great interior." It is made up of the Plateau of Central Brazil and the lower lands bordering the upper courses of the Paraná and Paraguay rivers. Find this part of Brazil on the map.

This great interior region of Brazil is as thinly settled as the Amazon Lowlands, but for a different reason. Much of it is *savanna*, or tropical grassland, but there are many forested stretches, especially along the rivers. Its surface and climate are well suited to farming, yet there are vast stretches of unused land. The crops that are raised are chiefly for the use of the people who live there. The principal use of the land is for cattle-raising, and the only export of importance is cattle hides.

The reason why so few people live in this region is because it is harder to reach than any other part of Brazil. It is shut off from the coast by the Brazilian Highlands, and its only railroad is the one from São Paulo to the Paraguay River. Some day, when more railroads connect the interior with the coast, more people will go to live there, and it will be a much greater farming and grazing region.

**Temperate Brazil.** Turn to the map on pages 276-277 and study the part of Brazil which lies in the south temperate zone. This temperate part of Brazil is very small compared with tropical Brazil, yet it is about four fifths the size of our great state of Texas.



It includes the southern end of the Brazilian Highlands and a part of the great region of plains known as the Paraná Lowlands. The plains are chiefly grasslands, much like the prairies of our country.

This is the part of Brazil which thousands of settlers from Europe have chosen for their home in recent years, and it has fewer Indians and mestizos than any other part of the country. Explain why white settlers prefer this part of Brazil to the tropical part.

**Farming and stock-raising.** Temperate Brazil is about the same distance from the equator as our Southern States, and has a long growing season. In the eastern part of the highlands region at the north the people raise coffee, cotton, and rice as well as temperate crops such as corn and wheat. Many of them carry on mixed farming, keeping cattle and hogs in addition to raising crops. In the plains farther south there are great cattle ranches which will remind you of the plains of Texas. At Rio Grande do Sul, the chief port of this region, there is a large meat-packing plant, and meat and cattle hides are exported.

**Two forest products.** The map opposite page 253 shows that the southern end of the Brazilian Highlands is covered with temperate forests. This is Brazil's lumbering region. Forests of splendid pine trees cover large stretches of land, and much pine lumber is exported to Uruguay and Argentina, countries which have little lumber of their own.

One of the trees that grows abundantly in the southwestern part of the Brazilian Highlands and along the Paraná River in Brazil and Paraguay is a kind of holly. The leaves of this tree are used to make what is called *yerba maté*, or Paraguayan tea. The people of southern Brazil and the neighboring countries like this kind of tea so well that thousands of men make a business of gathering the leaves and preparing them for use. In many places there are yerba-maté plantations,



Courtesy of the Pan American Union

Figure 266. Workmen carrying maté branches which they have cut from the trees. They will strip the leaves from the branches and cure them over a wood fire.

and maté leaves are exported to Argentina and Uruguay. See Figure 266.

**Looking ahead.** Some people believe that in time temperate Brazil will be the most densely populated part of the country. Already manufacturing is well started in the larger cities, and towns that were once small market centers are growing fast. The climate is well suited to white people, and every year brings many new settlers from Europe.

**Giving reasons.** You should be able now to explain why Brazil is so much less densely populated than the United States. Prove that you understand the reasons by completing the sentences below.

1. The Amazon Basin has few people compared with the Mississippi Basin because ----

2. The people of Brazil have not spread far inland from the Atlantic coast as the people of the United States have done because ----

3. The great interior of Brazil is thinly populated because ----

4. Brazil has much less land suited to white people than the United States has because ----



Courtesy of Williams, Brown, and Earle

**Figure 267.** Loading sugar for export at Georgetown, the capital of British Guiana. Study the map and tell what this ship may have brought to Georgetown.

**Planning for work in Brazil.** Imagine that eight of your friends have decided to move to Brazil, and that each one wishes to do a different kind of work there. Tell where each friend must go in Brazil to find the kind of work he wants, and what he may expect to see when he gets there. Name the Brazilian seaport for which he must buy a ticket, and use the maps to make all your directions clear.

Following are the kinds of work that your friends wish to do :

1. Start a rubber plantation.
2. Raise cane sugar.
3. Open a manganese mine.
4. Manage a cotton mill.
5. Carry on mixed farming.
6. Raise coffee.
7. Raise cacao.
8. Manage a yerba-maté plantation.

## 2. THREE EUROPEAN POSSESSIONS

Bordering Brazil on the north is the only part of South America that is not an independent country. This part is known as Guiana, and it is divided into three European colonies: British Guiana, belonging to Great Britain; Dutch Guiana, belonging to the Netherlands; and French Guiana, belonging to France. Find the three Guianas on the map. As you read about these possessions, find reasons why they are valuable to the countries which own them.

**The land and the people.** The map shows that the Guianas are divided into two regions,—the coastal lowland and the mountains of the interior. The coastal lowland is hot, rainy, and unhealthful for white people, and much of it is covered with tropical forest. Farther inland there are tropical grasslands, and the higher parts of the mountains are forested.

These colonies are thinly populated. There are no railroads leading into the interior, and so most of the people live along the coast. Scattered through the tropical forests of the interior are tribes of Indians who live much as those of the Amazon Lowlands do. The rest of the people are largely negroes and East Indians; that is, people from the East Indies in Asia. The East Indians, like the negroes, can stand the hot, moist climate of the lowlands because their home in Asia has a climate much the same.

**Farming and mining.** Agriculture is by far the most important work in the Guianas. Along the coast there are plantations of sugar cane, rice, coconuts, cacao, and other tropical crops. Some of the plantations are owned by white men and some by East Indians. Of all the plantation products sugar is the most important, and raw sugar makes up more than half the exports from the colonies. See *Figure 267*.

In all three colonies a little gold is mined and exported, but the leading mineral product is diamonds. These precious stones are mined in British Guiana. Bauxite mines owned by companies in the United States and Canada have been opened in British Guiana and Dutch Guiana, and the export of bauxite is growing in importance. You will remember that bauxite is the ore from which aluminum is obtained.

**A sentence to complete.** The chief products which make the Guianas valuable possessions are s----, d-----, b-----, and g----



### 3. THE CARIBBEAN COUNTRIES (VENEZUELA AND COLOMBIA)

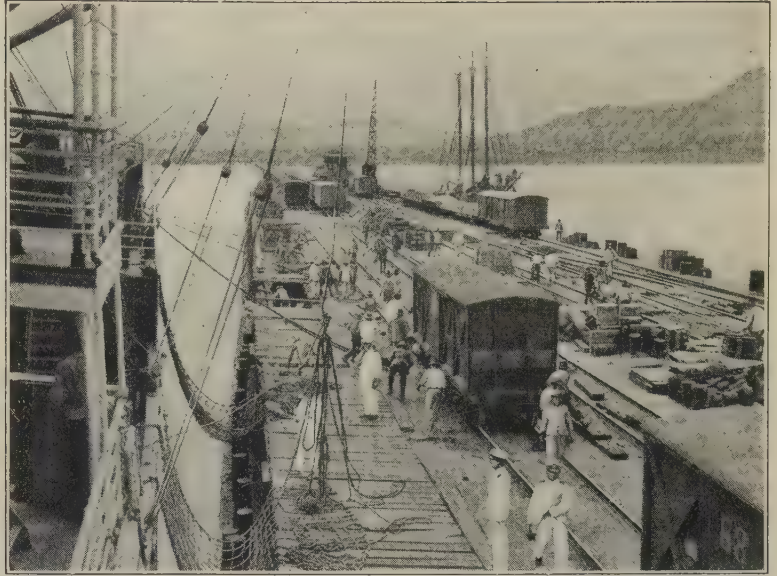
Turn to the map on pages 276–277, and find Venezuela and Colombia. Which of these two countries has its entire coast on the Caribbean Sea? Which one borders the Pacific Ocean as well as the Caribbean Sea? Which one is connected with North America by the Isthmus of Panama?

Although Colombia is not so very much larger than Venezuela, it has more than twice as many people and carries on much more trade with other countries. As you study this section, find reasons for these differences between Venezuela and Colombia.

**Two navigable rivers.** On the map on pages 276–277 find the Orinoco River in Venezuela (C3) and the Magdalena River in Colombia (B3). Notice that both rivers are navigable. Good-sized ocean vessels can enter the mouth of the Orinoco and go upstream as far as Ciudad Bolivar, 230 miles from the ocean. From Ciudad Bolivar river boats can go far inland on the Orinoco and its tributaries.

You might well expect the Orinoco to be a great highway of travel and transportation like the Amazon, and Ciudad Bolivar to be a busy seaport. This, however, is not true. Ciudad Bolivar is not an important seaport, and the only ocean-going ships which come to its wharves are freighters from ports on the northern coast of Venezuela.

The Magdalena River is different. Ships cannot enter its mouth because the lower course of the river is shallow and blocked by sand bars. In spite of this, the Magdalena is used much more for travel and transportation than the Orinoco. Ten miles upstream from its mouth is the river port of Barranquilla, one



By Thomas F. Lee from Ewing Galloway, N.Y.

**Figure 268.** The pier at Puerto Colombia. The pier is a mile long, providing space for many ships to load and unload at the same time. Study the map and tell what the freight cars carry from Puerto Colombia to Barranquilla. What do they bring back for export?

of the large cities of Colombia. A few miles to the west is Puerto Colombia, which serves as the seaport for Barranquilla. Find these two cities on the map on pages 276–277 (B2).

If you visit Barranquilla, you will see many boats which run between that city and river ports farther upstream. If you visit Puerto Colombia, you will see ocean ships from distant lands. Connecting the two cities is a railroad which carries passengers and freight back and forth between the river port and the seaport. See *Figure 268*.

Why is the Magdalena River such a great highway of transportation, while the Orinoco, which is longer and navigable for ocean ships far upstream, is used much less? You will be able to answer this question after you have studied more about the Caribbean countries.

**Lowlands that have few people.** On the map on page 257 find the Orinoco Lowlands which border the Orinoco River and its tributaries. Notice that these lowlands extend through central Venezuela into eastern Colombia, where they meet the Amazon Low-

lands. You already know that the Amazon Lowlands are covered with thick forests and have few people. In Colombia, as in Brazil, most of the people of the Amazon Lowlands are Indians and mestizos, and rubber-gathering is the only important work.

The Orinoco Lowlands are as thinly populated as the Amazon Lowlands, but for a different reason. They are tropical grasslands, and are known as the *llanos*. They are warm the year round because they are near the equator, and they have a rainy season and a dry season. From May till October there is so much rain that the lower parts of the llanos are often under water, and from December till March so little rain falls that the grass withers and dies in the hot sun.

Such a region is not a pleasant place in which to live. Farming is difficult, because during part of the year there is too much rain and during the rest there is too little. Cattle-raising is the only work of importance, and even this is hard, because in the rainy season much of the grazing land is flooded and in the dry season the withered grass makes poor feed for the cattle.

Few people, then, live in the eastern lowlands of Colombia and the central lowlands of Venezuela. You can see now why the Orinoco River is not used so much as it might be for transportation, and why Ciudad Bolívar is not a great seaport. What is the reason?

**Another thinly populated region.** About a third of Venezuela is in the Orinoco Lowlands. Another third or more is in the Guiana Highlands which border the lowlands on the southeast. Here too there are but few people because of the rough surface, the tropical heat, and the thick forests. There is only one short railroad in this region, and the mountain streams are not navigable. The highlands are thought to be rich in metal ores, but there is only one mining district. What kind of ore is mined there?

**Highlands that have many people.** The map on page 257 shows that the Andes Mountains run from north to south through western Venezuela and Colombia. In Colombia they are made up of three great ranges running side by side. The eastern range divides at the north, running to the Caribbean coast, and almost encircling Lake Maracaibo. Which of the two Caribbean countries has by far the larger share of the Andes?

Now turn to Figure 256 on page 256, and you will see that the Andes are the most densely populated region of the Caribbean countries. Remember what you have learned about highlands and lowlands in the tropics, and you will understand why more people live in the Andes than in any other region of these tropical countries.

Except for the seaports and the river port of Barranquilla, all the larger cities of Colombia and Venezuela are in the Andean region, where the elevation of the mountains makes the climate cooler and more healthful than in the lowlands. Among these cities are Bogotá and Caracas, the capitals and largest cities of the two countries. Find them on the map on pages 276-277 (*B3* and *C2*).

Bogotá is on a plateau in the midst of the mountains. It is a mile and a half above the level of the sea, and so in spite of its nearness to the equator it is a comfortable and healthful place in which to live. Caracas is but half a mile above sea level, yet it is much cooler than La Guaira, its seaport, which is only twenty-three miles away. See *Figure 269*.

**Coffee and other crops.** In spite of the rough surface farming is the most important kind of work in the Andean region. Here, in Colombia and Venezuela, is the second great coffee-growing region of South America. Coffee is by far the most important export from Colombia and the second most important from Venezuela. Find the coffee lands of the Caribbean countries on the map.



There are two reasons why coffee is the leading crop in the Andean region. One is that the climate and soils are well suited to the coffee plant. The other is that the steep mountain slopes can be used for coffee plantations because coffee is a tree crop and does not require the use of machinery.

In the lower valleys among the Andes the people raise tropical crops such as cacao, sugar cane, and cotton. These crops are also grown on the lowlands between the northern end of the Andes and the coast. Which one of them is an important export of Venezuela?

In northern Colombia there is a section where a great North American fruit company has large banana plantations such as you saw in Central America. Since these plantations were started, the coastal town of Santa Marta has become a busy seaport. Study the map, and explain why.

On the plateau surrounding Bogotá and on other high plains among the mountains the people raise wheat, barley, potatoes, and other temperate crops. That is because the climate of these higher parts of the Andes is much cooler than the climate of the lowlands.

**Cattle-raising.** The map shows that hides are an important export from both Colombia and Venezuela. Most of the cattle are raised in the Andean region and on the coastal lowlands at the north, where there are the most cities and towns to provide markets for meat. Cattle-raising, as you know, is also carried on in the llanos, but the cattle from that region are fattened in pastures near the seaports and city markets in northern Venezuela.

**Precious metals and stones.** You will remember that the young, rugged mountains of North America are rich in metal ores.



Courtesy of the Pan American Union

**Figure 269.** Caracas, the capital of Venezuela. Caracas is connected with La Guaira by a railroad and an automobile road. Six times as many people live in Caracas as in La Guaira. Explain why.

Since the Andes are a southern extension of those mountains, you will not be surprised to learn that they too have much mineral wealth. In Colombia there are several places where placer mining for gold and platinum is carried on. Platinum is a white metal like silver, but it is much more valuable than gold. Colombia is one of the two greatest platinum-mining countries in the world. See *Figure 270*.

Perhaps you have seen a pin or a ring set with emeralds. These precious stones are green, and they cost more than diamonds. Nearly all the emeralds mined in the world come from Colombia.

**Oil and asphalt.** In addition to precious metals and stones, there is a wealth of petroleum in the Caribbean countries. The most important oil fields are around Lake Maracaibo in Venezuela and in the Magdalena valley in Colombia. Find them on the map, and study *Figure 271*.

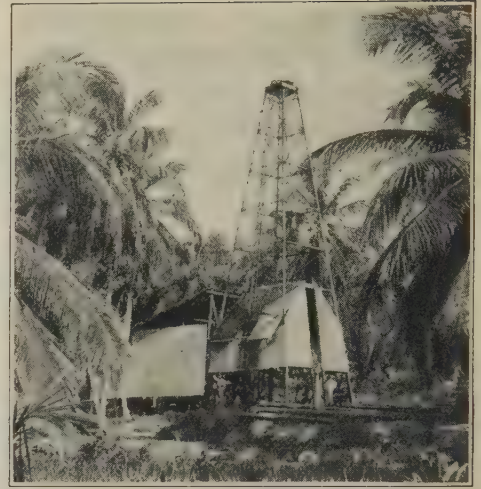
Some of the oil produced in the Magdalena valley is refined there, and gasoline, kerosene, and other refined oils go down the Magdalena in river boats to be exported from Puerto Colombia. Crude oil is pumped through a





From Ewing Galloway, N.Y.

**Figure 270.** Placer mining in Colombia. The big dredge scoops up the stream gravels, which contain bits of platinum and gold. In what state of our country is gold mined in this way?



**Figure 271.** An oil derrick in the Magdalena valley. What ports of the Caribbean countries export mineral oils?

pipe line to the seaport of Cartagena for export. Find Cartagena on the map (B2).

The map shows that Lake Maracaibo is not really a lake, but the inner portion of the Gulf of Venezuela. At its northwestern end is the seaport of Maracaibo. Pipe lines from the oil fields of Venezuela bring crude oil to Maracaibo for export. Much of the oil goes to the little Dutch island of Curaçao, where there are refineries.

Each year Colombia and Venezuela are producing more and more oil, and in Venezuela the exports of mineral oils are worth much more than the exports of coffee.

If you live in the city, you know that asphalt is a soft, brownish-black substance which hardens in the air and is used in paving streets. Most of the asphalt that we use comes from petroleum refineries, for in refining certain kinds of petroleum asphalt is left after all the oils have been removed. In Venezuela there are asphalt "lakes" which have been formed by nature. The surface of the lakes is crusted over and is so hard that men dig the asphalt with pickaxes. Most of the asphalt mined in Venezuela is exported to the United States.

**Transportation by river and railroad.** The ranges of the Andes are so high and so steep that in spite of all the people who live in the Andean region few railroads have been built. The great highway of travel and transportation in Colombia is the Magdalena River, which flows northward between the central and eastern ranges of the Andes and is navigable for over 600 miles through the most densely populated part of the country. Do you see now why the Magdalena is used so much more for transporting people and goods than is the Orinoco?

Bogotá and a few other cities in the highlands are connected with the Magdalena River by railroads. From other places there are roads leading to the river, but many of them are so rough that only oxcarts can use them. Parts of the mountains have no roads at all, and the only way to travel or transport goods is on the backs of mules or donkeys.

Over the railroads, the cart roads, and even the mule paths, coffee and other products of the Andean region move toward the river for export to distant lands. At the river ports they are loaded on boats which carry them downstream. Their river journey ends either



at Barranquilla or at a port a little farther upstream. There they are loaded on trains which carry them to Puerto Colombia or to Cartagena. Manufactured goods and other imports from distant lands make the same journey in the opposite direction to reach the towns and cities in the highlands. See Figure 272.

Some of the products of the western part of the Andean region go down the Cauca River, which is a tributary of the Magdalena. Others go by train to Buenaventura, Colombia's seaport on the Pacific Ocean.

Venezuela has even fewer railroads than Colombia. The most important ones are short lines which connect the ports on the northern coast with the larger cities in the highlands. These railroads carry coffee, cacao, and other products of northern Venezuela to the seaports for export to distant lands.

**A comparison.** You have now learned enough about the Caribbean countries to understand why Colombia has more people and carries on more trade than Venezuela. The best climate for white people, the best farm lands, and the richest mining districts of both countries are in or near the Andean region. Since Colombia has much the greater share of this region, it has many more white people, raises more crops, and carries on more mining than Venezuela. Therefore it has larger quantities of products to export and can import greater quantities of goods in return.

You have found that Colombia has a coast line on the Pacific Ocean as well as on the Caribbean Sea. This gives Colombia an advantage over Venezuela in carrying on trade with the western part of the United States and the Pacific-coast countries of South America.



Courtesy of the Pan American Union

Figure 272. Boats being loaded with coffee at a small port on the Magdalena River. Find some of the donkeys which have brought the bags of coffee from the plantations to the river for export.

**Giving reasons.** Complete each of the following sentences by giving reasons for the fact which it states :

1. Most of the people of the Caribbean countries live in or near the Andean region because .....

2. The Magdalena River is used much more than the Orinoco for travel and transportation because .....

3. There are few railroads in the densely populated Andean region because .....

4. Most of the railroads of Colombia connect cities and towns in the highlands with ports on the Magdalena River because .....

5. Coffee is the leading crop in Colombia and Venezuela because .....

6. Wheat and other crops of the temperate zone can be raised in these tropical countries because .....

7. Mining is important in both Caribbean countries because .....

8. Caracas is a much larger city than La Guaira, its seaport, because .....

9. Barranquilla is a river port but not a seaport because .....

10. Colombia has more people and carries on more trade than Venezuela because .....



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Figure 273. Part of the great public square in Lima. The foundations of the beautiful church that you see in the picture are said to have been laid by Pizarro in 1535. How long ago was that?

### *Trinidad*

**A British possession.** On the map on pages 276-277, find the island of Trinidad (C2). Although Trinidad is close to Venezuela, it belongs to Great Britain. It has rich soils and a tropical climate, and plantation crops such as cacao, sugar, and coconuts are grown for export.

Trinidad has an asphalt lake like those in Venezuela, and the mining of asphalt is important. But Trinidad's most valuable mineral product is petroleum. Among all the lands that belong to the great British Empire, Trinidad stands second in the production of petroleum, and large quantities of mineral oils are exported to Great Britain.

### 4. THE CENTRAL ANDEAN COUNTRIES (ECUADOR, PERU, AND BOLIVIA)

On the map on pages 276-277, find the countries of Ecuador, Peru, and Bolivia. You will see that they extend from just north of the equator to the tropic of Capricorn, and that they include the broad central part of the

Andes. For this reason we call them the central Andean countries. Which of these countries has no seacoast? Which one is the smallest? The name *Ecuador* means "equator." Why has the country been given that name?

Turn to the map again, and study the products and exports of these three countries. Then try to answer the following questions:

1. In which one of the central Andean countries is agriculture the most important kind of work?
2. In which one is mining the most important kind of work?
3. In which one are agriculture and mining both important?

Write your answers to these questions and keep them until you finish studying this section.

**An Indian empire of long ago.** Long before Columbus discovered America there were Indians living in the central Andes who had become so powerful that they ruled over all the other Indian tribes from Colombia to northern Chile. The center of their empire was in the highlands of southern Peru. There they built wonderful palaces and temples of stone and decorated them with gold and silver which they mined in the mountains.

These rich, powerful Indians were known as the Incas. When the Spanish heard of their wealth of gold and silver, they sent Captain Pizarro with an army into western South America. Pizarro and his men conquered the Incas and made their empire a colony of Spain. That was nearly a hundred years before the Pilgrims came to America.

Eight miles from the Pacific coast Pizarro built a capital city for the new colony. Later this city came to be called Lima, and today it is the capital of Peru and the largest city of the central Andean countries. See Figure 273.



Although white men conquered and settled these countries so long ago, the Indians make up more than half the population today. In the cities, however, there are many white people, most of whom are descendants of the early Spanish settlers. As you would expect, there are also many mestizos.

**"The roof of America."** From southern Colombia two giant ranges of the Andes extend southward for over two thousand miles. Besides the main ranges there are many shorter ones, some running north and south and some running east and west. People often call this central section of the Andes "the roof of America," because it is the highest land in the Western Hemisphere.

Between the mountain ranges are high plains and plateaus such as you found in the neighborhood of Bogotá. By far the greatest of these is the Plateau of Bolivia. It is more than two and a half miles above sea level and is one of the highest plateaus in the world, yet the mountains that surround it are even higher. Find the Plateau of Bolivia on the map on page 257.

**Indian life in the warmer part of the highlands.** On the map on pages 276-277 find Cuzco in Peru (B5). This city was the capital of the old Inca Empire. Northward from Cuzco is the warmer part of the central Andes — the part nearer the equator.

Many of the Indians in the valleys and high plains in the warmer part of the highlands live on small farms where they raise corn, wheat, barley, and potatoes and many other vegetables. Most of them raise enough food for their families and have a little left over for sale. In the towns there are open market places where the Indians gather to sell vegetables and other farm products. See Figure 274.

Besides the Indians who carry on farming in the mountains, there are many others who tend cattle on ranches belonging to white



Courtesy of W. Spencer Hutchinson

Figure 274. The market place in a town in the Andes of Peru. The Indian women have come in from the country with vegetables, fruits, and meats to sell.

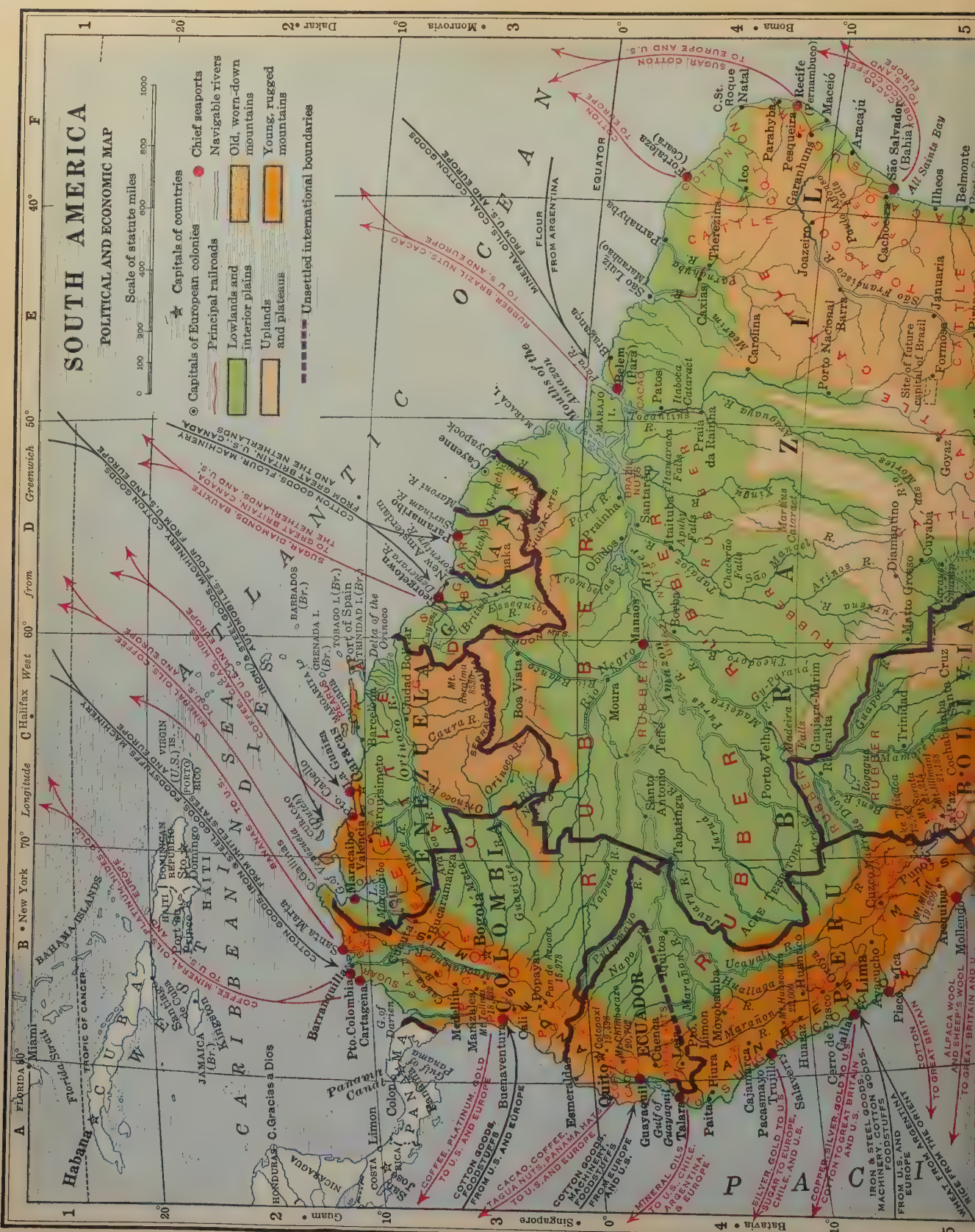
men. These ranches provide meat for the people in the cities of Ecuador and Peru, and hides for export.

**A famous mining district.** Still others of the Indians work in mines, for the central Andes, like the northern Andes, are rich in metal ores. On the map on pages 276-277 find Cerro de Pasco (B5), and name the kinds of metals that are mined near there. Notice that a railroad connects this mining district with Lima and its seaport, Callao.

The Cerro de Pasco copper mines are among the richest in the world. These, and other mines not far away, belong to mining companies of the United States, and they make Peru one of the great copper-producing countries. Besides copper, this mining district produces silver, gold, and vanadium, a metal which is used in making especially strong steel. Most of the copper, silver, and gold, and almost all the vanadium is exported to the United States.

At Oroya, on the railroad between Cerro de Pasco and Callao, there is a great smelting plant where large quantities of the ores from the mines are smelted to separate the metal from the rock. See Figure 275.











Courtesy of Raymond and Whitcomb Company

Figure 275. The great smelting plant at Oroya. From this plant bars of copper and silver go by train to Callao for export to the United States and Europe.

Many of the mines are high up in the mountains, and the ores have to be brought down to the railroad on the backs of donkeys or llamas. Perhaps you have seen llamas in a zoo. They are found only in the Andes of South America, where the Indians tamed them for beasts of burden long ago. They have thick coats of wool which keep them warm, and they can climb up and down the steepest mountain trails carrying loads weighing a hundred pounds or a little more on their backs. See Figure 276.

An unpleasant part of the Andes. Southward from Cuzco the Andes become higher, and the two main ranges inclose the high Plateau of Bolivia. The plateau and the surrounding mountains are so high that the weather is cold in winter, and even in summer when the days are hot, the nights are cold and frosty. Besides this, much of the plateau has little rain, because the bordering mountains rob the winds of their moisture. Few trees can grow in the cold, dry climate, and even the grass is poor. Cold winds often sweep over the region, driving clouds of sand and dust before them.

You can easily see that this bare, wind-

swept plateau is not a pleasant place in which to live. Where there is enough rain the Indians do a little farming, but the only crops that are sure to ripen are barley, potatoes, and beans. Since there are no trees, the Indians build their little huts of rocks or sod and cover the roofs with straw.

Many of the Indians keep sheep or other animals which can live on the poor grass of the plateau and the bordering mountains. From the wool of these animals they weave cloth for clothing.

The Indians who are counted the richest are those who own the largest herds of llamas. These are by far the most useful animals on the plateau, for they provide the Indians with a means of transportation and they can live on much less grass and water than sheep can.

Some of the Indians keep small flocks of alpacas. These animals belong to the same family as the llamas, but they have much longer and heavier wool. The Indians sell their alpaca wool to merchants who export it to distant lands.

**A surprise.** After what you have learned about the Plateau of Bolivia, you will probably be surprised to find that it is one of the most densely populated parts of the Andes. In this high plateau and the bordering mountains are all the larger cities of Bolivia and three fourths of all the people of the country. Turn to the map on pages 276-277, and see if you can discover why so many people choose to make their homes in this cold, barren region.

**Another great mining region.** The map shows that it is mineral wealth which explains why so many people live in the Bolivian Plateau. The region is wonderfully rich in metal ores, and ever since the days of the Incas mining has been the most important kind of work in the plateau and the bordering mountains. Mining centers have grown up in places so high, so barren, and so hard





Photograph by Ewing Galloway, N.Y.

**Figure 276.** Llamas resting in the railroad yards of a town in the Andes of Peru. They have brought bags of copper and silver ore down to the railroad from a mine much higher in the mountains.

to reach that no one would live there if it were not for the metal ores. Most of the larger mines belong to companies in the United States and Europe, though a few belong to wealthy Bolivians. Large numbers of Indians get their living by working for the mining companies. The men do the mining and the work in the smelters, but many Indian women and boys earn money by sorting the ores. *See Figure 277.*

Of all the metals mined in this region tin is by far the most important, and about one fourth of all the world's tin comes from Bolivia. Silver, copper, lead, and other metals are also mined, and altogether metals and metal ores make up about nine tenths of Bolivia's exports.

As you would expect, all the larger cities of Bolivia are mining centers. Among them are Oruro and Potosí, which were famous silver-mining towns in the days when Bolivia belonged to Spain. Today their tin mines are much more important than their silver mines.

The largest city of Bolivia is La Paz. It is one of the oldest cities in the Americas,

for it was an Inca mining center long before the coming of the Spaniards. Find La Paz on the map (C5), and notice the railroads that meet there.

La Paz is the great business center of Bolivia. Many mining companies have offices there, and many other kinds of business are carried on. It is also the home of the president of Bolivia and the place where the Bolivian Congress meets to make laws for the country. For this reason you might well expect La Paz to be the capital of Bolivia. Study the map and see if this is true.

The map shows that Sucre, not La Paz, is the capital of Bolivia.

It also shows that no railroad runs to Sucre. Since it is much easier to reach La Paz than Sucre, much more of the government business is carried on in La Paz than in the capital city. *See Figure 278.*

**How Bolivia trades with the outside world.** Since Bolivia has no seacoast, all its trade with distant lands must be carried on through ports of the neighboring countries. The nearest



**Figure 277.** Indian boys and women sorting ore at a tin mine in Bolivia. The ore from the mine passes by them on a broad, moving belt, and they pick out the worthless pieces of rock and throw them away.





Figure 278. A street in La Paz. Nearly all the buildings in La Paz are built of stone. Can you explain why? How many railroads meet in this city?

ports are on the coast of Peru and Chile. From La Paz there are three ways to reach the Pacific coast. One route starts with the railroad from La Paz to a town at the southern end of Lake Titicaca. This lake is the highest body of water in the world that is used for navigation. Boats meet the trains at the southern end of the lake and carry passengers and goods to a town in Peru at the northern end. From there a railroad runs to the seaport of Mollendo, in Peru.

The other two routes are by railroad from La Paz to the seaports of Arica and Antofagasta in Chile. Trace the three routes on the map, and name the products of Bolivia which are exported from Arica and Antofagasta.

Few crops can be raised in the plateau, and few factories have been built in the cities. For this reason the people need large quantities of foodstuffs and manufactured goods from outside. In exchange they have their metals and metal ores to export. They depend on the railroads to carry their exports to the seaports and to bring back foodstuffs, manufactured goods, and other supplies.

On the map on pages 276-277 trace the railroad that runs southward from the Bolivian Plateau to Buenos Aires, in Argentina. This railroad connects Bolivia with the Atlantic coast, but it is much longer than the routes to the Pacific. For this reason most of Bolivia's trade is carried on through the ports of Chile and Peru.

**The eastern lowlands.** East of the Andes in Ecuador, Peru, and Bolivia is the region which the people call the *montaña*. This is part of the hot, rainy Amazon Lowlands. Most of the people are Indians who live in little grass-roofed huts, wear few clothes, and get their living by hunting and fishing. Explain why they live so differently from the Indians in the Andes.

The only work of importance in the *montaña* is the gathering of wild rubber in the forests, and the only towns of any size are those where the rubber is collected for export. Chief among these is Iquitos on the Amazon River in Peru. This town is a busy river port, and at its wharves you will see ocean steamers which have come all the way up the Amazon to bring supplies for the people and to carry away rubber.

**The coastal region of Ecuador.** On the map on pages 276-277 find the Gulf of Guayaquil in Ecuador (44). The valley lowland which extends northward from this gulf is the most densely populated part of the country. In the lowland the people raise tropical crops such as cacao, sugar cane, and cotton, and on the bordering mountain slopes they raise coffee. Which two of these crops are important exports of Ecuador? Name two other exports from this country.

Have you ever heard of tagua nuts? They are the seeds of the tagua palm, which grows wild in the tropical forests along the Pacific coast from Panama to northern Peru, and their kernels are so hard that they provide one of the best materials for making buttons.





Courtesy of the Pan American Union

Figure 279. A tagua palm in Ecuador. Hanging from the trunk are the big burrs which contain the nuts. The nuts are about as large as horse chestnuts. They are often called ivory nuts because the kernels are hard and white like ivory.

Large quantities of them are used for this purpose in the United States and Europe. In Ecuador many of the Indians make a business of gathering ripe tagua nuts and preparing them for export. See Figure 279.

Perhaps your father has a Panama hat, and, if so, it may have come from Ecuador. These soft, beautifully woven hats were first made in Ecuador, but the first ones to reach our country came from Panama. That is how they happen to be called Panama hats. The straw is prepared from the young leaves of another kind of palm which grows in the same region as the tagua palm. The Indians of Ecuador are so skillful in preparing and weaving the straw that Panama hats are an important export.

A lowland seaport and a highland capital. All the trade of Ecuador with distant lands is carried on through the seaport of Guayaquil. Find this city on the map (B4), and study Figure 280.

Since Guayaquil is located on the coast near the equator, it is a very hot place, and for many years it was so unhealthy that at times ships from distant lands were not allowed to stop there. With the help of health experts from the United States, the people of Ecuador have stamped out the fevers which made Guayaquil so dangerous, and today it is one of the most healthful tropical seaports in the world.

On the map find the railroad that runs from Guayaquil to Quito, the capital and second largest city of Ecuador. Quito is on a plateau more than a mile and a half above sea level, and so, although it is close to the equator, its climate is springlike the year round. Of what capital city in the northern Andes does this remind you? Where should you prefer to live — in Guayaquil or Quito?

**The coastal region of Peru.** From Panama to southern Ecuador the Pacific coast of South America is covered with tropical forests. South of Ecuador the forests disappear, and the coastal region of Peru is mostly desert. In spite of the little rain this is the most important agricultural section of Peru. Perhaps you can guess why. The land is level, and streams from the Andes provide water



Courtesy of the Pan American Union

Figure 280. The water front at Guayaquil, the seaport and largest city of Ecuador. This city is located near the mouth of the Guayas River, which flows into the northern end of the Gulf of Guayaquil, and its harbor is always calm and safe for ships.



From Ewing Galloway, N.Y.

Figure 281. Part of the water front at Callao. At the left is an ocean freighter. The sailing vessels at the right carry goods from port to port along the Pacific coast of South America.

for irrigation. Each river valley is a strip of farming land where the people raise sugar cane, cotton, rice, and other crops. So much sugar and cotton is grown on the irrigated lands that they are two of the leading exports of Peru.

At the northern end of the coastal region Peru has rich oil fields. Refineries have been built here, and both crude oil and refined oils are valuable exports.

**Ports without harbors.** The coast of Peru is so straight that there is only one good harbor for ships. But since both the coastal region and the Andean region provide products for export, the people have made many of the coastal towns seaports by building breakwaters some distance from the shore. These long walls of stone break the force of the waves and make the water on the landward side calm enough for ships to anchor. Find the seaports of Peru on the map. Name the exports of each one and tell what regions of Peru they come from.

**Cities of the coastal region.** The one good harbor on the coast is at Callao, the seaport

for Lima. Here you will see many ships from distant lands loading and unloading goods at wharves along the shore. Because of its harbor and its nearness to Lima, Callao is the leading seaport of Peru. See Figure 281.

From Callao you can travel by train or automobile to Lima. Besides being the capital and largest city of Peru, Lima is the leading business and manufacturing center of the country. The streets in the business section are lined with stores, office buildings, and government buildings, and in the factories cotton goods, woolen goods, leather, shoes, and many other things are made.

Farther south is Arequipa, which is connected by railroad with the seaport of Mollendo. Arequipa is the second largest city in Peru and the business and manufacturing center of the southern part of the country.

**A check.** The answers to the questions on page 274 are 1, Ecuador; 2, Bolivia; 3, Peru. Look at the answers which you gave, and see if they are correct.

**An export test.** 1. Below is a list of the nine leading exports of the central Andean countries. Arrange them in three groups according to the countries where they are produced. Remember that some of them are produced in more than one country.

|              |        |        |
|--------------|--------|--------|
| tin          | cotton | cacao  |
| mineral oils | sugar  | rubber |
| copper       | silver | coffee |

2. Now group the exports according to the regions from which they come: (1) the montaña; (2) the Andean region; (3) the coastal region of Ecuador; (4) the coastal region of Peru. Describe the surface and climate of each region and tell about the work connected with its chief products.



**Checking what you have learned.** Copy the sentences below, filling each blank space with the name of a tropical country of South America. After you have finished, prove by the map that your work is correct.

1. The largest country in South America is -----.
2. Three European possessions in South America are -----, -----, and -----.
3. The country that borders both the Caribbean Sea and the Pacific Ocean is -----.
4. The country that borders the Caribbean Sea only is -----.
5. The central Andean countries that border the Pacific Ocean are ----- and -----.
6. The central Andean country that has no coast line is -----.

**Matching cities and ports.** Each inland city named below uses some other city as its seaport. Match each city with its port :

## INLAND CITIES

São Paulo  
Bogotá  
Caracas  
Quito  
Lima

## PORTS

Puerto Colombia  
Guayaquil  
Santos  
Callao  
La Guaira

**Testing yourself.** Each of the names listed below this exercise belongs to one of the following phrases. Write the names in their correct order.

1. Carries more water to the ocean than any other river in the world.
2. A city in the heart of the Amazon Lowlands.
3. A large river which flows through a thinly populated lowland in Venezuela.
4. Second largest city in South America.
5. A river which is a highway of travel and transportation in Colombia.
6. The seaport at the mouth of the Amazon.
7. The highest lake in the world used for transportation.
8. A sea directly north of South America.
9. A city which is the center of an important mining region in Peru.
10. Second largest city in Brazil and the "capital of Coffee Land."
11. A city which is the great business center of Bolivia.
12. The great river port of Colombia.

|                |           |         |
|----------------|-----------|---------|
| Magdalena      | Amazon    | Belem   |
| Barranquilla   | Caribbean | La Paz  |
| Rio de Janeiro | São Paulo | Manáos  |
| Cerro de Pasco | Titicaca  | Orinoco |

## III. TEMPERATE SOUTH AMERICA

**Foreword.** Turn to the map on pages 276-277, and name the countries of South America which are wholly, or almost wholly, in the south temperate zone. Which ones border the Atlantic Ocean? Which one borders the Pacific Ocean? Which one has no seacoast? In what months do the children of the temperate countries of South America have their summer vacation from school?

Have you ever heard people speak of the "ABC countries" of South America? They mean the three leading countries — Argentina, Brazil, and Chile. What reason can you suggest to explain why the two largest *temperate* countries of South America are among the three leaders?

The other two temperate countries are much smaller. Of the two Uruguay is much the more important, though it is less than half as large as Paraguay. Can you suggest any reason for this?

The map shows that much of Argentina, all of Uruguay, and most of Paraguay are in the temperate plains of South America. What kinds of work do you expect to find going on in those plains? Chile is quite different from the other temperate countries because much of it is mountainous. What kinds of work do you think the people of Chile do?

As you study this chapter, keep in mind the questions asked in this foreword, and see if you have answered them correctly.



Figure 282. Broken caliche in a nitrate field, and the train which will carry it to an oficina for refining.



Courtesy of the Pan American Union

Figure 283. A nitrate oficina. From the crusher at the right the caliche is carried on a moving belt up to the refining tanks at the left. In the foreground are bags of nitrate ready for export.

## 1. CHILE — THE TEMPERATE ANDEAN COUNTRY

People sometimes call Chile "the sliver of South America" because it is so long and narrow. It stretches along the Pacific coast for 2700 miles, and is more than ten times as long as it is wide. The map shows that the northern end of Chile extends into the torrid zone. Cape Horn, at its southern end, is almost as far south of the equator as the southern tip of Alaska is north of the equator. What does that suggest to you about the differences in temperature between northern and southern Chile? What does Figure 255 on page 256 tell you about the differences in rainfall?

On Figure 256 on page 256 find the most densely populated part of Chile. Notice that this is the central part. As you study this section, find reasons why central Chile has so many more people than the rest of the country.

**A rich desert.** In northern Chile, between the Andes and the coast ranges, is the Atacama Desert. This is one of the driest regions of the whole earth, and in many parts of it not a drop of rain has fallen for years and years. There are no trees or grass, and only one river from the Andes flows across the desert to the sea. Yet this region has brought

more wealth to Chile than any other part of the country. Do you know why? Find the Atacama Desert on the map on pages 276-277, and see if you can discover the reason.

Did the word "nitrate" on the map make you think of the fertilizer factories in our country? One of the most important minerals used in making fertilizers is nitrate, and the Atacama Desert is the only region in the world where nitrate is found in great enough quantities to be mined. Chile provides nearly all the world's supply.

**Work in the nitrate fields.** Thousands of men work in the desert, mining the nitrate and preparing it for export. The rock which contains the nitrate is called *caliche*, and is found in layers a few feet beneath the surface of the ground. The workmen bore holes down into the caliche and put dynamite in them. Then they explode the dynamite, and the caliche and the rock that covers it are blown high into the air. The broken caliche is then taken to refining plants called *oficinas*. See Figure 282.

At the oficinas the caliche is crushed and then put in huge tanks of boiling water. The hot water dissolves the nitrate, separating it



from the worthless materials of the caliche, which sink to the bottom of the tanks. Then the water with the nitrate dissolved in it is run into huge pans, and as it cools and evaporates the nitrate changes into white crystals. The crystals are dried and later put into bags for export. *See Figure 283.*

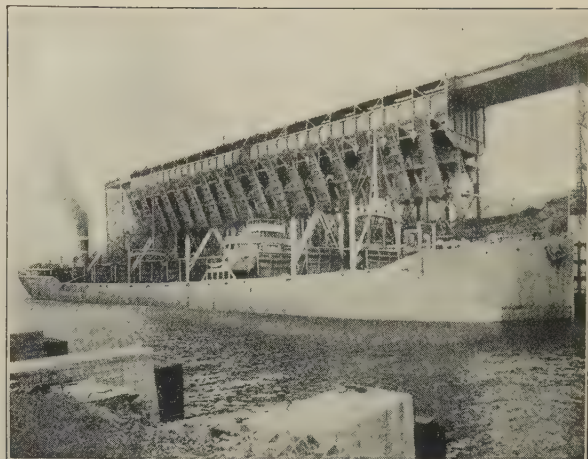
Another product which is obtained in the refining of nitrate is the drug known as iodine. No doubt you have seen iodine, for it is often used in treating cuts and bruises. Each nitrate company produces iodine, but its value is small compared with that of the nitrate.

Everything that is needed in the nitrate fields must be brought from outside the desert. Water comes through long pipe lines from the melting snows in the Andes. Food for the workmen, mining tools, machinery, and all other supplies come by train from the seaports or from central Chile.

**The nitrate ports.** From each oficina the nitrate goes by train to the nearest seaport. There are nine "nitrate ports" in all, and not one has a natural harbor. Here, as on the coast of Peru, towns without harbors have become busy seaports because the region behind them has valuable products for export. Only the three leading nitrate ports are shown on the map. What are their names? To what parts of the world does most of the nitrate go?

**Other mineral wealth of Chile.** On the map find a place in the northern desert of Chile where copper is mined. There is a whole mountain of copper ore here which belongs to a great copper-mining company of the United States. Huge steam shovels dig the ore from the mountain sides, and little cars that slide down steel cables carry it to buildings where the metal is separated from the rock. This is the greatest copper-mining camp in the world, and every week long trainloads of copper bars are sent to Antofagasta for export to the United States.

On the map find a copper-mining center



Courtesy of C. A. Buck, vice president of the Bethlehem Steel Company

**Figure 284.** A boat loading iron ore at Cruz Grande in Chile. What canal will it pass through on its way back to the eastern part of the United States?

in central Chile. This and the one in the northern desert make Chile the second copper-mining country in the world. Our own country is first.

Turn to the map again, and find a port of Chile from which iron ore is exported to the United States. There you will see ocean freighters loading ore at docks like those at Duluth. The ore comes by electric railway from mines six miles away. The mines, the railway, and the docks belong to a great steel company of Pennsylvania. *See Figure 284.*

**The Central Valley of Chile.** On the map on pages 276-277 find the valley lowland which extends from north to south through central Chile. Notice that it lies between the Andes and the coast ranges. In this lowland and the bordering coast land live nine tenths of all the people of Chile.

Central Chile is like California in so many ways that it is often called "the California of South America." The location of the Central Valley is like that of the Valley of California, with high, snow-capped mountains on the east and low coast ranges on the west. The climate too is much the same. The rainfall is light and comes mostly in the winter, while the summers are hot and dry. The

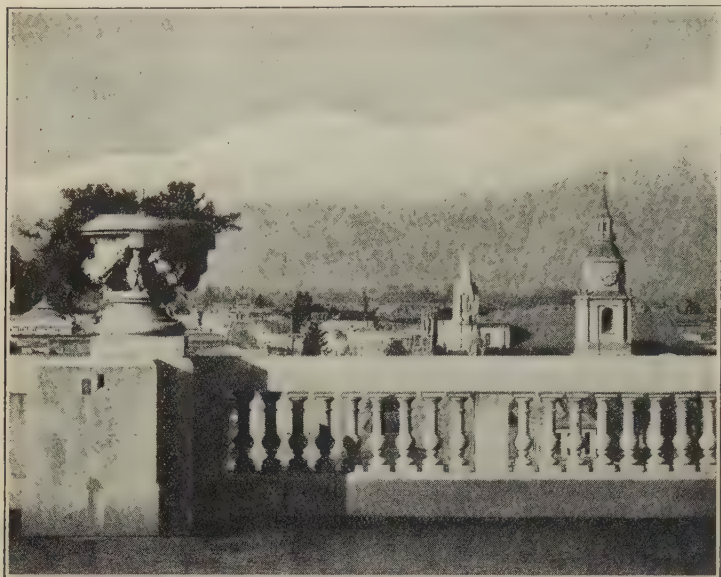


Figure 285. A view of the snow-capped Andes from Santiago. Why has Santiago a larger population than any of the capital cities of the central Andean countries farther north?

northern part of the region has too little rain for farming, but streams from the Andes provide water for irrigation.

**A mixed-farming region.**—The Central Valley is the only part of Chile which is well suited to farming. The land is level, the soils are rich, and the growing season is long. Most of the farmers carry on mixed farming.

The climate is especially good for winter wheat, and this is the leading crop. The farmers plant the wheat in May or June, just before the winter rains begin, and harvest it in the summer month of January. The farmers also raise barley, oats, corn, alfalfa, beans, and potatoes. The corn and alfalfa are used mostly to feed cattle, sheep, and other live stock on the farms.

Near the larger cities there are dairy farms and market gardens. The climate of the northern part of the valley is so mild that vegetables can be grown out of doors on the irrigated lands all winter long.

**Fruit-growing.** Like California, central Chile is a wonderful fruit-growing region. Almost every kind of fruit grows there — grapes,

apples, peaches, plums, oranges, lemons, and many others. Grapes are by far the most important and are grown principally for making wines. Many of the fruits are canned, and many are dried in the bright summer sunshine, as they are in California, and both fresh and preserved fruits are exported to neighboring countries.

**The capital of Chile and its seaport.** On the map on pages 276–277 find Santiago, the capital of Chile, and Valparaiso, its seaport (*B7*). Santiago is one of the four largest cities of South America. It has a beautiful location near the northern end of the Central Valley of Chile, within sight of the snow-capped Andes, and its climate is so mild that flowers bloom

the year round. Long, well-paved avenues run through the city, lined with fine public buildings and private houses. The business section of the city has many stores and office buildings, for Santiago is the business center of Chile. See *Figure 285*.

From Santiago it is 117 miles by railroad to Valparaiso. This city is the largest seaport on the Pacific coast of South America. The bay on which it is located is very deep, but it does not form a good natural harbor because it opens broadly on the ocean. For this reason the people of Valparaiso are building breakwaters to make the harbor safer. The reason why Valparaiso has become the leading Pacific seaport of South America is that it is the ocean gateway for the most densely settled temperate region west of the Andes. See *Figure 286*.

**Manufacturing in central Chile.** Chile is not a great manufacturing country, but there are mills and factories in Santiago, Valparaiso, and some of the cities farther south. Among them are flour mills, tanneries, shoe factories, textile mills, and clothing factories. Although



they supply some of the needs of the Chilean people, most of the manufactured goods are imported from distant lands.

Chile is better suited to manufacturing than most of the South American countries because it has coal. On the map find a place in the Central Valley where coal is mined. Besides this, the streams from the Andes provide abundant water power in central and southern Chile, and some day much hydroelectricity will be used for manufacturing.

**Fiords and forests of the south.** Turn to the map, and study the coast of southern Chile. Notice that it is much like the coast of southeastern Alaska. The mountains rise steeply from the sea, and deep, narrow bays, or *fiords*, lead far into the land. Offshore there are many islands, and between these and the coast there is an "inside passage" for ships, like the one along the Alaskan coast.

You will remember that the coast of southeastern Alaska is very rainy because of the westerly winds which blow toward it from the ocean. Southern Chile is very rainy for the same reason, for it lies in the path of the westerly winds in the Southern Hemisphere. Explain why these winds bring so much rain to southern Chile.

Because of the heavy rainfall southern Chile is covered with temperate forests. The trees are not so large as those in western Oregon and Washington, but they make southern Chile one of the two most important lumbering regions of South America. Where is the other?

**Farthest south in South America.** On the map on pages 276-277 find the city of Magallanes (B9). This is the southernmost city in the world. Notice that it is located on the Strait of Magellan, which separates the large island of Tierra del Fuego from the mainland



Courtesy of the Pan American Union

**Figure 286.** The harbor of Valparaiso. What kinds of goods do ships bring to Valparaiso from distant parts of the world? What Chilean products do they carry away?

of South America. This southernmost part of South America is cold, rainy, and often swept by terrible winds and storms from the ocean. The climate is too cool for farming, but the region is well suited to the raising of sheep. Some of the sheep ranches here are among the largest in the world, and Magallanes is an important port for the shipment of wool and mutton.

**Finding endings.** Choose the right ending for each of the sentences below :

1. There is no farming in northern Chile because of its  
rough surface.      dry climate.      poor soils.
2. Northern Chile has many seaports because of its  
natural harbors.      railroads.      nitrate fields.
3. The Central Valley is the leading farming region of Chile because it has level land, a long growing season, and much  
rainfall.      sunshine.      water for irrigation.
4. Southern Chile is not well suited to farming because of its  
poor soils.      mountainous surface.      little rain.



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Figure 287. A train on the Transandine Railway. This railroad was very hard to build, and it cost a huge sum of money. What reason can you give for this?

**Snapshots.** Don't you like to take pictures? Where could you take these pictures in Chile?

1. Write these headings on a piece of paper :

*Northern Chile      Central Chile      Southern Chile*

2. Write the titles of your pictures of Chile under the names of the regions where you take them: a fruit farm; a lumber camp; a nitrate oficina; a wheat field; an iron-ore mine; a sheep ranch; an irrigated farm; a manufacturing city; a copper mine; a dairy farm; a market garden.

3. At the bottom of your paper copy these sentences, filling the blank spaces correctly :

a. My pictures show that the region that has the most kinds of work is ----- Chile.

b. ----- Chile is the most densely populated part of the country because -----.

**Loading ships at Chilean ports.** 1. Write these headings on a piece of paper :

|                |                  |                |
|----------------|------------------|----------------|
| <i>Product</i> | <i>Loaded at</i> | <i>Sent to</i> |
|----------------|------------------|----------------|

2. Write the names of the following products under the first heading: nitrate, copper, iodine, wool, grain, mutton, iron ore.

3. Opposite each product write the name of a Chilean port where it is loaded on ships, and the countries to which it is sent. You may use the map (pp. 276-277) as a help.

## 2. THE PLATA COUNTRIES (ARGENTINA, PARAGUAY, AND URUGUAY)

One of the most interesting trips in South America is from Valparaiso to Buenos Aires over the Transandine Railway. You start at the Pacific coast, and in the first hundred miles your train climbs upward more than 10,000 feet to the Uspallata Pass through the Andes.

Instead of running over the mountain pass, your train runs through a tunnel under it, and comes out on the Argentine side of the Andes. From there you travel down the eastern slope of the Andes and across the level Pampa of Argentina to Buenos Aires on the Plata River. The trip takes thirty-six hours, and it carries you from the greatest Pacific seaport of South America to the greatest Atlantic seaport. See Figure 287.

Turn to the map on pages 276-277, and find the Plata River (D7). You will see that it looks more like a bay than a river, and that it carries the waters of the Paraná, Paraguay, and Uruguay rivers to the Atlantic Ocean. The plains which these rivers drain are called the Paraná Lowlands, and they include most of Paraguay, Uruguay, and northern Argentina. These three countries are often called the Plata countries because nearly all their trade with distant lands is carried on by way of the Plata River.

One way to measure the importance of countries is to compare their trade. You already know that Argentina is one of the ABC countries of South America. In size and population it stands second among the South American countries, but in trade with distant lands it stands first. Uruguay is the smallest South American country, yet in trade it stands fifth. Only the great ABC countries and Colombia rank higher. Paraguay is larger than Uruguay, yet it carries on less trade than any other South American country except Ecuador. How, then, do the three Plata countries rank in order of importance?

As you study the Plata countries, make a list of reasons that help to explain (1) the leadership of Argentina in trade, (2) the high rank of little Uruguay, and (3) the low rank of Paraguay.



**Getting acquainted with Argentina.** Turn to the map on pages 276–277, and study the shape and surface of Argentina. Notice that the country is broadest at the north and that it narrows to a point at the south. Notice also that along its western border Argentina shares the high, rugged Andes with Chile. Find Mount Aconcagua on the boundary line between the two countries (C7). This is the highest mountain peak in the Americas.

The rest of Argentina is mostly a vast plain, extending north and south for over 2000 miles. The northern end of the plain is warm the year round, for it extends across the tropic of Capricorn into the torrid zone. The southern end, bordering the Strait of Magellan, is cool in summer and bitterly cold in winter.

As you would expect, the difference in temperatures between the northern and southern parts of the Argentine plain makes a great difference in the way the people get their living. There are differences of rainfall too, which you will discover as you learn more about Argentina.

**Patagonia and its sheep ranches.** On the map on pages 276–277 find the Negro River (C8). South of this river is the part of Argentina known as Patagonia. Turn to Figure 255 on page 256, and tell how much rain falls in Patagonia each year. You will remember that the westerly winds cause heavy rainfall on the western side of the Andes in southern Chile. Patagonia, on the eastern side, is dry for the same reason, that the plateaus east of the Sierra Nevada and Cascade Range in our own country are dry. Explain the reason.

You may think of Patagonia as a land of few people and many sheep. Sheep-raising is the only work of importance because the cli-



Courtesy of Department of Agriculture, Buenos Aires, Argentina

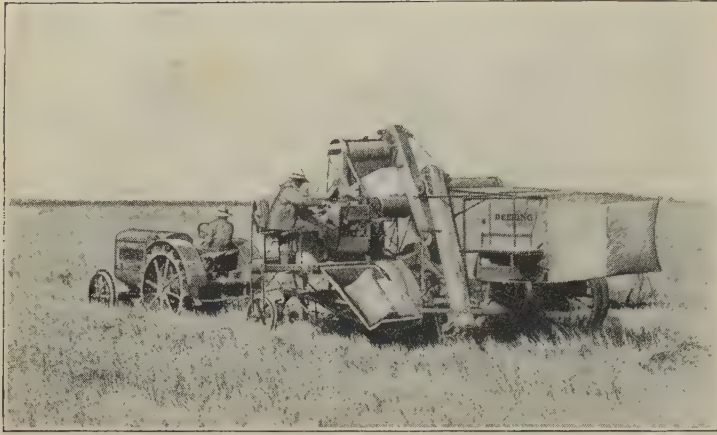
**Figure 288.** Sheep in southern Argentina. This picture was taken in the spring after the sheep had been sheared. At what port in our country did you see wool from South America? See page 39.

mate is too dry for farming and the grass is too poor for cattle. The ranches are very large, for in order to keep enough sheep to make a living each ranchman must have thousands of acres of grazing land. See Figure 288.

The sheep are raised mostly for their wool, and the shearing begins in the spring month of November. Wagons drawn by horses or oxen carry the wool to the nearest railroad stations or to ports on the coast for shipment to Bahia Blanca. Find Bahia Blanca on the map (C7). There the wool is loaded on ocean ships for export.

**The Pampa.** The great plain known as the Pampa extends northward from Patagonia to the latitude line of 30°, and makes up about one fourth of Argentina. Find this region on the map.

Vast stretches of the Pampa are so level that a house, a barn, or a straw stack stands out clearly against the sky. Turn to Figure 255 on page 256, and study the rainfall of the Pampa. Notice that the rainfall is rather light over the whole region, and that it grows less from east to west. This should remind you of the distribution of rain in our own interior plains.



Courtesy of International Harvester Company of America, Inc.

Figure 289. Harvesting wheat on the Pampa with a harvester-thresher made in the United States. The man nearer you catches the wheat in a sack as it comes from the thresher.

Because of the light rainfall, most of the Pampa is a vast grassland, with no trees except where the people have planted them for shade. In this way it is much like our prairies and Great Plains, and it is one of the best farming and grazing regions in the world. The level surface makes it easy for the farmers to use farming machinery; the grass provides millions of acres of pasture lands; and the climate is so mild that cattle and sheep can graze out of doors at all seasons of the year.

**Argentine wheat lands.** On the map find the part of the Pampa where wheat is the leading crop. The wheat lands form a crescent-shaped belt extending from the western bend of the Paraná River in the north to Bahia Blanca in the south. The farms in this part of the Pampa will remind you of those in the winter-wheat lands of our country. In May, June, and July,—late autumn and early winter in Argentina,—you will see the farmers sowing wheat with big machine drills. In November, December, and January,—late spring and early summer,—you

will find them harvesting their crops with harvesting machines and harvester-threshers. See Figure 289.

In Argentina you will miss the great grain elevators which you found along the railroads in our own wheat lands. The Argentine wheat farmers put their grain into sacks and stack them in the fields. Teamsters with huge wagons drawn by horses, mules, or oxen collect the sacks of wheat from the farms and carry them to the railroads. See Figure 290.

Although this part of the Pampa produces huge quantities of wheat, it is not a one-crop region. Most of the farmers have herds of beef cattle and raise alfalfa to feed and fatten them. Alfalfa, you will remember, grows well in regions of light rainfall, and it is as good as corn for fattening live stock. In the Pampa the climate is so mild that alfalfa grows in winter as well as in summer, and the farmers get from three to six crops a year.

**The Argentine corn belt.** The corn belt of Argentina is east of the northern part of the wheat lands, and extends to the Paraná River.



Courtesy of Department of Agriculture, Buenos Aires, Argentina

Figure 290. Sacks of wheat piled beside a railroad track in the Pampa. Trains carry the wheat to Rosario, Buenos Aires, and Bahia Blanca for export. To what parts of the world does it go?



Here there is more rain than in the wheat lands, and corn is the principal crop.

When you visited the corn belt in our country, you learned that most of the corn is used to fatten cattle and hogs on the farms. The corn-belt farmers of the Pampa raise most of their corn as a money crop for export to distant lands. Argentina is the leading corn-exporting country of the world.

In the Argentine corn belt the farmers who keep cattle fatten them on alfalfa. As you might expect, many of the farmers raise hogs also, using both corn and alfalfa to feed them. Hogs are not so important, however, as they are in our own corn belt.

Another important crop in the Argentine corn belt is flax, which is raised for its seeds. You will remember that flaxseed is known as linseed and that it is used to make linseed oil.

**A dairying section.** On both sides of the Plata River, in Uruguay as well as in Argentina, there are many dairy farms. Study the population map (Figure 256 on page 256), and explain why dairying is so important on the shores of the Plata.

Dairying has grown very fast in this section in the last few years, and there are many butter factories and cheese factories. Besides the dairy products which are sent to the cities, considerable quantities of butter and cheese are exported. In this section there are also market gardens and orchards which supply the cities with vegetables and fruits.

The part of the dairying section which is in Uruguay is the only important farming district of that country. There, besides the dairy farmers and market gardeners, there are many farmers who raise wheat, corn, oats, barley, and flax.

**Two great ranching sections.** The map on pages 276-277 shows that most of Uruguay is a land of cattle and sheep. These great grazing lands extend far beyond the boundaries of Uruguay, and include southern Brazil



Courtesy of Swift & Company

Figure 291. An Argentine boy on his pony. Instead of a coat, he wears a woolen blanket called a *poncho*. All Argentine ranch boys are good horseback-riders.

and the Paraná Lowlands of northeastern Argentina and southern Paraguay. Farther south, in Argentina, another great grazing section extends across the eastern part of the Pampa from the wheat lands to the ocean.

**A visit to an estancia.** The great ranches of these grazing lands are called *estancias*, and many of them cover a hundred square miles or more. At the headquarters of each estancia is the owner's house, which is built round an open court, or *patio*, in the Spanish style. Trees planted near the house give shade and shelter from the wind, and flowers make the patio a lovely garden. Close by are many other buildings, where the ranch workers live.

Figure 291 is a picture of Luis Alcorta, an Argentine boy, whose father owns a great estancia in the eastern part of the Pampa. He goes to school in Buenos Aires, where his father has another house; but in vacation time you will find him at the estancia.

Luis will lend you a pony like his own to ride, and will take you out to see the cattle and sheep. He will tell you that the ranch covers 150 square miles, and that his father owns 15,000 cattle and 100,000 sheep. He will also tell you that it takes more than 500 people to do all the work on the estancia.



Courtesy of Swift & Company

**Figure 292.** Cattle on an Argentine estancia. They have been fattened on alfalfa and are ready to be sent to market. Argentine beef is considered very fine, and large quantities are exported.

Among them are large numbers of cowboys and sheep-herders, who spend most of their time on horseback tending the cattle and sheep. See *Figure 292*.

As you ride over the grazing lands, you will see that the pastures are fenced with wire, and that some are for cattle and some are for sheep. As soon as the animals have eaten the forage in one pasture, the cowboys and sheep-herders drive them to another. You will find that some of the cattle are grazing on grass, while others are grazing on alfalfa. Luis says that his father is planting more and more of his land to alfalfa because it makes better feed for the stock than the grass does.

Luis's father keeps some of his sheep for wool and some for mutton. All his cattle are beef cattle. When the time comes to send the meat animals to market, the cowboys and sheep-herders drive them to the nearest railroad. There they put them into cars which carry them to Buenos Aires or La Plata, where there are great meat-packing plants. See *Figure 293*.

The shearing of the sheep begins in the spring month of November. The herders bring the sheep together at several different places on the estancia and clip the wool with electric shears. The wool is packed in bales, loaded on carts, and taken to the railroad. Sometimes Luis's father sends his wool to Buenos Aires and sometimes to Bahia Blanca. From these sea-ports ships carry the wool to distant lands.

You will find the ranches in Uruguay and northeastern Argentina much like Luis's ranch, except that in Uruguay the natural grass is so rich that the ranchmen do not pasture their stock on alfalfa.

**Irrigated lands.** On *Figure 256* on page 256 find the most densely settled parts of western Argentina. This section of the country has little rain, and the more thickly settled parts are "oases" such as you found in some places in the dry plains and plateaus of the United States. They are located where streams from the Andes provide water for irrigation.

On the map on pages 276-277 find the cities of Mendoza (C7) and Tucumán (C6). If you had stopped off at Mendoza on your way from Valparaiso to Buenos Aires, you would have found yourself in an oasis where thousands of acres of irrigated lands are covered with vineyards. Many different kinds of grapes are raised there, chiefly for making wines. See *Figure 294*.

The irrigated district farther north is close to the tropic of Capricorn, in the warmest part of the temperate zone. Because of the long growing season, it has become Argentina's cane-sugar district. The sugar plantations are much like those which you have seen in other





Courtesy of Armour & Company

Figure 293. Beef cattle at a meat-packing plant at La Plata. This plant belongs to a great meat-packing company whose headquarters are in Chicago.

parts of South America. The cane is crushed and the raw sugar prepared in mills on the plantations. Some of the raw sugar is refined in Tucumán and other cities of the region, but more of it goes to cities nearer the coast for refining.

Other products of the irrigated lands are alfalfa, corn, fruits, and vegetables. Many of the farmers have dairy herds, and many raise beef cattle. In the summer, cattle are driven over the Andes and sold in the mining centers of the Atacama Desert of Chile and the Platteau of Bolivia.

Both Tucumán and Mendoza owe their growth to irrigated farming. They are centers for the shipment of products of the "oases" and for the distribution of manufactured goods to the people on the surrounding farm lands.

**A crop and live-stock test.** This test will help you to review what you have learned about farming and stock-raising in Argentina.

1. The Pampa is a great farming and grazing region because .....

2. The two leading crops of the Pampa are  
oats.      wheat.      potatoes.      corn.      flax.

3. The two leading kinds of live stock raised on the Pampa are

horses.      cattle.      mules.      hogs.      sheep.

4. The Argentine corn belt is east of the wheat lands because .....

5. Wheat and corn are raised in Argentina chiefly for

food.                      feed for live stock.                      export.

6. The dairying section of Argentina borders the Plata River because .....

7. The two leading crops of the irrigated lands in Argentina are

wheat.      sugar.      rice.      corn.      grapes.

8. The ranchmen in Patagonia raise sheep rather than cattle because .....

**The Gran Chaco.** Turn to the map on pages 276-277, and find the region which is called the Gran Chaco (C-D6). Notice that it extends from northern Argentina across western Paraguay into Bolivia. On the east it extends to the Paraná and Paraguay rivers.



Courtesy of Department of Agriculture, Buenos Aires, Argentina

Figure 294. Vineyards near Mendoza, in western Argentina. The Spanish-Americans drink light wine with their meals, and so the raising of grapes and the making of wine provide work for many people.

This region is a low plain, partly grass-land and partly forest. Its location makes it warm the year round, and like the Orinoco Lowlands, it has a rainy season and a dry season. During the dry season, which comes in the winter, so little rain falls that the grass withers and turns brown. During the rainy season the rivers overflow their banks and flood large stretches of land.

As you would expect, few white people have cared to settle in this region. Its population is small, and most of the people are Indians. In places cattle-raising is carried on, but the Chaco is a rather poor region for this kind of work. Can you explain why? If not, review what you learned about cattle-raising in the Orinoco Lowlands.

Farming too is of little importance, though the Indians raise a few crops for food. In one place, however, people have moved into the Chaco of Argentina to raise cotton. Find this place on the map, and notice the railroad which passes through it. The railroad has led many new settlers to make their homes here, and each year more cotton is being raised.

**Forest work.** The most important work in the Gran Chaco is connected with the forests in the eastern part of the region. One of the trees that grows there is the *quebracho*. The word *quebracho* means "ax-breaker." The wood of this tree is very hard, and it provides tannin, which is used in the tanning of leather.

In the quebracho forests you will see many Indians at work chopping down the trees and cutting off the bark. From the forests the logs are sent to factories known as extract plants. There they are chipped into small pieces, and the chips are boiled in hot water to extract the tannin. As a result of this work, the tanning material known as quebracho extract is obtained. This material is a jelly-like substance. It is pressed into bags, and after it has been dried it is ready to be shipped

away. Large quantities of quebracho extract are used in the tanneries of our country.

In places the quebracho trees are cut for lumber, and the logs are sent to sawmills along the rivers. Quebracho wood makes strong beams, railroad ties, and fence posts; and considerable quantities of these forest products are exported from the Chaco to other parts of South America.

**The Paraguayans and their country.** Most of the Paraguayans are mestizos, while most of the Argentinos and Uruguayans are white people. This difference in people is one reason why Paraguay has grown so much more slowly than Argentina and Uruguay. There are other reasons which you will discover as you read the next paragraphs.

The map shows that nearly half of Paraguay is west of the Paraguay River, in the Gran Chaco. You already know why so few people live in that region. On the east, Paraguay shares the yerba-maté forest with Brazil. Here too there are few people. The forests make the land hard to clear for farming; the warm, moist climate is rather unhealthy; and no railroads connect the region with the outside world.

**Where most of the Paraguayans live.** Nearly all the people of Paraguay live in the lowland east of the Paraguay River. This region has fertile soils, plenty of rain, and a long growing season; and it is well suited to farming and cattle-raising. Unfortunately, most of the farmers are mestizos who have never cared about making the best use of their land. They raise corn, rice, sugar cane, and other crops for food, but the only crops raised in large enough quantities for export are tobacco, cotton, and oranges.

There are a few large, well-managed estancias where the cattle are carefully tended and make good meat animals. Elsewhere most of the cattle are of poor quality, and hides, rather than meat, are exported.



Until very recently the Paraguayans have used old-fashioned methods of farming and have been careless in tending their cattle. For this reason neither farming nor stock-raising has brought them much wealth. In the last few years they have been learning better ways to do their work, and their trade with other countries is now increasing.

**Asunción — capital and river port.** On the map on pages 276–277 find Asunción, the capital and largest city of Paraguay (D6). On what river is it located?

Asunción is an attractive old Spanish city with wide, shady streets and low buildings seldom more than two stories high. The houses look very plain from the street, but they are built around pleasant patios where flowers blossom at all times of year.

The busiest part of the city is the river front. There you will see boats which run back and forth between Buenos Aires and Asunción, carrying passengers and goods. You will also see boats which have come downstream from cities farther north, and you will realize that the Paraguay River is the great highway of travel and transportation through the country. *See Figure 295.*

A few short railroads connect some of the quebracho centers and some of the larger estancias with the Paraguay River, but the only railroad which connects Paraguay with the outside world is the one which runs from Asunción to Buenos Aires. Trace the route of this railroad on the map.

**What Paraguay needs most.** The greatest hindrances to the growth of Paraguay are its inland location, far from the sea, and its lack of railroads. All its trade with distant lands must be carried on through ports on the Plata River. Buenos Aires, the greatest of these



Courtesy of the Pan American Union

**Figure 295.** Part of the river front at Asunción. The boats in the picture have brought passengers and goods to Asunción from Buenos Aires. Trace their route on the map on pages 276–277.

ports, is a thousand miles from Asunción by train or boat. The river trip between the two cities takes four or five days, while the railroad trip takes but two.

What Paraguay needs most is more railroads to connect all parts of the country with the Paraguay River, and to connect the country as a whole with Buenos Aires. When more railroads are built, more settlers from Europe will go to Paraguay; more farming, stock-raising, and forest work will be carried on; and more wealth will come to the country through trade with distant lands.

**Where transportation is best in South America.** Turn to the map on pages 276–277, and study the network of railroads in Uruguay and Argentina. Notice that the railroads of Uruguay spread out in fan shape from its seaport of Montevideo, while those of Argentina spread out in the same way from its seaports of Buenos Aires and Bahia Blanca.

Nowhere else in South America are there so many miles of railroads. One reason for this is the level surface, which makes railroad-building easy. Another, and far more important, reason is that these temperate plains are among the richest farming and grazing



From Ewing Galloway, N. Y.

Figure 296. Grain elevators along the water front at Buenos Aires. Ships from many countries of Europe come to this great port to take on cargoes of Argentine

wheat and corn. Argentina leads all the countries of the world in the export of corn, and ranks next to Canada and the United States in the export of wheat.

lands of the world. Since they produce huge quantities of foodstuffs and raw materials which are needed in the manufacturing countries of the Northern Hemisphere, it has been worth while to build railroads to carry these products to the coast.

Can you picture the trains loaded with grain, wool, cattle, sheep, and other products of the farms and ranches speeding over these railroads from the north, the west, and the south, bound for the Atlantic seaports? And can you picture them as they speed back, carrying manufactured goods and many other things for the people on the farms and ranches?

**The largest city of South America.** Buenos Aires is the greatest of the ocean gateways through which the products of the temperate plains of South America pass on their way to distant lands. It is the capital of Argentina, the largest city of South America, and the fourth largest in the Western Hemisphere. Only New York, Chicago, and Philadelphia are larger. About one fifth of all the people of Argentina live in this great seaport.

The people of Buenos Aires are very proud of their beautiful city. Built on level land, its streets are broad and straight, and, except in the crowded business sections, they are shaded by carefully tended trees. Electric-car lines connect all parts of the city, and a subway carries passengers underground. The government buildings, business blocks, banks, hotels, and theaters are as fine as any in our country.

On the streets in Buenos Aires you will see many foreigners, or people from other countries. Most of them are people from western Europe and the United States who have come to Argentina to carry on business. There are so many foreigners in Buenos Aires that some of the daily newspapers are printed in Italian, German, and French, as well as in Spanish.

**A great seaport.** Find Buenos Aires on the map on pages 276-277 (*D7*). Notice that it is located on the south side of the Plata River, a long distance from the open sea. The land bordering the Plata is low and flat, and near Buenos Aires the river is shallow. For this reason the people of Buenos Aires have had to



make their harbor. To do this they have dug deep, oblong-shaped basins leading from the river into the land. Each basin is bordered by long stone wharves where the largest ocean ships can load and unload their cargoes. See *Figure 296*.

No matter when you visit Buenos Aires, you will see ships of all kinds at the wharves—huge ocean liners from Europe and the United States, ocean freighters from all parts of the world, and river boats which have come down the Paraná. Turn to the map, and name the more important things that ships from the United States and Europe bring to Buenos Aires. Then name the products of Argentina which they carry away.

**Manufacturing in Buenos Aires.** As you might expect, the largest city and chief seaport of Argentina is also the leading manufacturing center. Among the manufacturing plants of Buenos Aires you will find flour mills, meat-packing plants, sugar refineries, tanneries, shoe factories, textile mills, and clothing factories. You will see from this list that the leading manufactures are those which make use of raw materials produced in Argentina. For the greater part of their manufactured goods the Argentinos depend on imports from Europe and the United States.

**Other Argentine cities.** East of Buenos Aires, on the Plata River, is La Plata. More beef and mutton are shipped from here than from any other Argentine port.

About 200 miles up the Paraná River from Buenos Aires is Rosario, the second largest city of Argentina and the second most important port. Find this city on the map on pages 276–277 (C7). Rosario is the great business center for the Argentine corn belt



Figure 297. Part of the water front at Montevideo. From the map name the exports of Montevideo. What do they suggest about the importance of stock-raising compared with farming in Uruguay?

and the northern part of the wheat lands, and it exports even more grain than Buenos Aires.

Farther inland, on the western margin of the wheat lands, is Córdoba. Find this city on the map (C7). Like so many cities in our own interior plains, Córdoba has grown up as a market center for the neighboring farm and ranch lands. It has flour mills, tanneries, and other manufacturing plants which use raw materials produced close by.

**Uruguay's capital and seaport.** At Buenos Aires you can step into an airplane and fly across the Plata River to Montevideo, the capital and seaport of Uruguay. Nearly one fourth of all the people of Uruguay live in Montevideo, making it by far the largest city in that country.

Like Buenos Aires, Montevideo is a beautiful city with broad streets, fine public buildings of all kinds, and pleasant homes. Since all the main railroads of Uruguay meet here, three fourths of all the trade of the country passes through this one port. See *Figure 297*.

Uruguay, like Argentina, carries on little manufacturing except the kinds which are



Courtesy of the Pan American Union

Figure 298. Preparing jerked beef at Montevideo. Jerked beef is beef which has been salted and dried, and it keeps a long time, even in the tropics. Most of the exports of jerked beef go to Brazil and Cuba.

connected with its leading products. Since it is largely a stock-raising country, its manufactures are few. Chief among them are meat products. There are large meat-packing plants in Montevideo, two of which are owned by companies in the United States. See Figure 298.

**Countries with little mineral wealth.** Argentina, Uruguay, and Paraguay have less mineral wealth than any of the other South American countries. In the Andean region of northwestern Argentina there are metal ores, but very little mining is done because the region is so far from the coast.

In Patagonia, Argentina has a valuable oil field. Find this place on the map. Each year the oil production is increasing, but as yet it is less than that of Peru or the Caribbean countries, and mineral oils are imported.

None of the three Plata countries has any iron or coal, and all the coal that is used is imported from Europe. The lack of these minerals is a great hindrance to manufacturing, and the Plata countries will probably never be great leaders in this kind of work.

### *The Falkland Islands*

**British possessions.** On the map on pages 276-277 find the Falkland Islands, which belong to Great Britain (C-D9). These islands are so far south that they are too cold for farming, and the people get their living chiefly by raising sheep. Whales are caught in the cold waters south of the Falklands, and whale oil and wool are sent to Great Britain. What do the people of the Falkland Islands import from Great Britain?

### *The Trade of South America*

In studying the exports and imports of the South American countries you have learned that the trade is mostly with the densely populated manufacturing countries of Europe and with the United States. You can easily understand why when you remember that South America produces large quantities of foodstuffs such as wheat, corn, meat, and coffee, and of raw materials such as wool, hides, nitrate, and metals. The foodstuffs are needed in Europe and our country to help to feed the people, and the raw materials are needed for the mills and factories.

In return, South America needs the manufactured goods which Europe and the United States can supply. Most of the South American countries have little or no coal, and none of them carries on much manufacturing. Therefore the South Americans need to buy a great variety of manufactured products, especially machinery and other manufactures of iron and steel.

This exchange of products through trade is of great benefit to all the countries which have a part in it. South America provides valuable markets for products of the mills and factories of our country and Europe, and we, in turn, provide valuable markets for the products of the farms, ranches, and mines of South America.



## A REVIEW OF SOUTH AMERICA

**Can you name these countries?** 1. The largest temperate country of South America is -----

2. The smallest temperate country is -----.

3. The temperate country without a seacoast is -----.

4. The temperate country bordering the Pacific coast is -----.

**An export test.** 1. Write these headings on a sheet of paper:

*Farm products    Ranch products    Forest products*

2. The map on pages 276-277 gives the ten leading exports of the Plata countries. Write the name of each export under the proper heading on your paper.

3. When you have finished, copy the following sentence, filling the blanks correctly:

My lists show that most of the exports of the Plata countries are ---- products and ----- products.

**A map test.** 1. On an outline map of South America print these names in the correct places, doing the work from memory:

|                    |                     |
|--------------------|---------------------|
| Atlantic Ocean     | Paraná River        |
| Pacific Ocean      | Paraguay River      |
| Caribbean Sea      | Andes Mountains     |
| Strait of Magellan | Brazilian Highlands |
| Amazon River       | Guiana Highlands    |
| Orinoco River      | The Pampa           |
| Plata River        | Patagonia           |

2. Print the name of each South American country in the correct place.

3. When you have finished, check your map by the map on pages 276-277 to make sure that you have made no mistakes.

**Matching countries and capitals.** Below is a list of the capitals of the independent countries of South America. Name the countries in the order in which the capitals are listed.

|                |          |         |
|----------------|----------|---------|
| Rio de Janeiro | Quito    | Lima    |
| Buenos Aires   | Bogotá   | Sucre   |
| Montevideo     | Asunción | Caracas |
|                | Santiago |         |

**Finding reminders.** Haven't you heard people say "This place reminds me of -----?" Tell where a person from each of the following places in North America would find a place in South America to remind him of home:

(1) The Valley of California; (2) the wheat lands of Kansas; (3) southeastern Alaska; (4) the corn belt of the United States; (5) the copper-mining district of Montana; (6) a coffee plantation in Central America; (7) the sugarcane lands of Louisiana; (8) the oil fields of Mexico; (9) the cotton belt of the United States; (10) a ranch in the Great Plains; (11) an irrigated "oasis" in our Western plateaus; (12) a banana plantation in Central America.

**Some things to explain.** 1. On Figure 256 (p. 256) find the three most densely populated parts of South America. Explain why so many people live in those sections.

2. Explain why northern Argentina has more people than southern Argentina.

3. Explain why southern Brazil has more people than northern Brazil.

**Sentences to complete.** 1. The South American countries trade mostly with the temperate countries of North America and Europe because -----

2. The exports of South America are mostly raw materials and foodstuffs because -----

3. The imports are largely manufactured goods because -----

4. The countries of South America do not carry on much manufacturing because -----

5. South America is a "continent of opportunity" because -----

**A South American exhibit.** Get samples of as many different South American products as you can and mount them in the proper places on a large outline map of the continent.

Cut pictures of South American scenes from old magazines and paste the most interesting ones on posters, labeling them neatly.

Invite your parents or the pupils of another class to see the exhibit. Perhaps you can plan some short talks to make the showing of the posters more interesting.

## KEY TO NUMBERS

### NORTH AMERICA

1. British Honduras
2. Costa Rica
3. Guatemala
4. Honduras
5. Nicaragua
6. Panama
7. Salvador

### SOUTH AMERICA

1. British Guiana
2. Dutch Guiana
3. Ecuador
4. French Guiana
5. Paraguay
6. Uruguay

### EUROPE

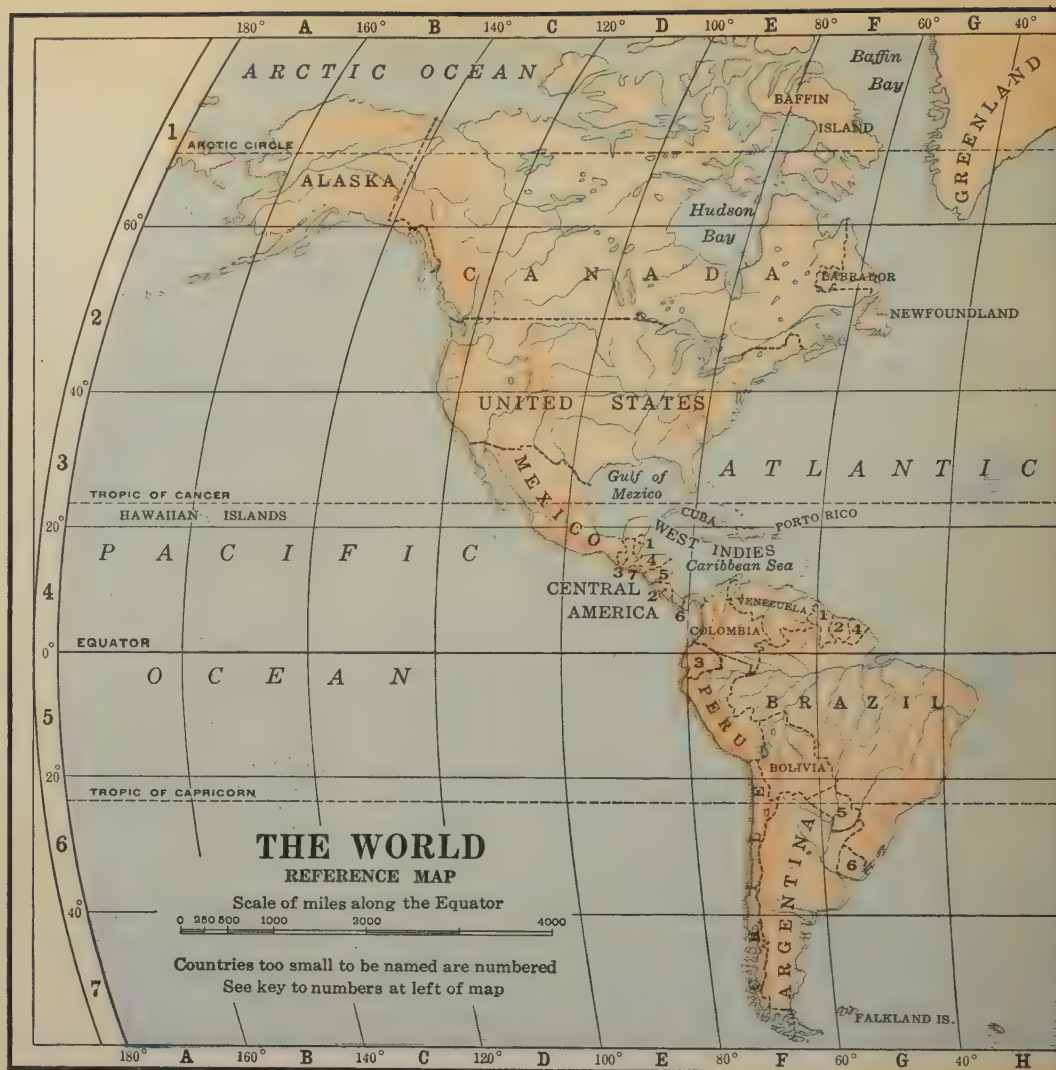
1. Albania
2. Austria
3. Belgium
4. Bulgaria
5. Czechoslovakia
6. Denmark
7. England
8. Estonia
9. Greece
10. Hungary
11. Irish Free State
12. Latvia
13. Lithuania
14. Netherlands
15. Northern Ireland
16. Portugal
17. Rumania
18. Scotland
19. Switzerland
20. Wales
21. Yugoslavia

### AFRICA

1. Ashanti and Gold Coast
2. Bechuanaland
3. British Somaliland
4. Eritrea
5. French Somaliland
6. Italian Somaliland
7. Liberia
8. Nyasaland
9. Portuguese Guinea
10. Sierra Leone
11. Tunisia
12. Uganda

### ASIA

1. Bhutan
2. British Malaya
3. Irak
4. Nepal
5. Oman
6. Palestine
7. Syria
8. Trans-Jordan
9. Yemen



Map Plate, Patented July 5, 1921 · Method of Making Maps, Patented July 5, 1921

## AREAS AND POPULATIONS OF THE

### NORTH AMERICA

|                  | AREA IN<br>SQUARE MILES | POPULA-<br>TION |
|------------------|-------------------------|-----------------|
| Alaska           | 590,884                 | 59,278          |
| British Honduras | 8,598                   | 48,584          |
| Canada           | 3,684,723               | 9,519,220       |
| Costa Rica       | 23,000                  | 471,524         |
| Cuba             | 44,164                  | 3,572,850       |
| Greenland        | 827,300                 | 14,355          |
| Guatemala        | 42,353                  | 2,119,165       |
| Honduras         | 44,275                  | 700,811         |
| Labrador         | 110,000                 | 3,977           |
| Mexico           | 767,198                 | 15,501,684      |
| Newfoundland     | 42,734                  | 262,177         |
| Nicaragua        | 51,660                  | 650,000         |
| Panama           | 32,380                  | 446,000         |
| Salvador         | 13,176                  | 1,634,000       |
| United States    | 3,026,789               | 122,775,046     |

### SOUTH AMERICA

|           |           |            |
|-----------|-----------|------------|
| Argentina | 1,153,119 | 10,312,189 |
| Bolivia   | 514,155   | 2,820,119  |
| Brazil    | 3,285,318 | 39,695,000 |

### AREA IN SQUARE MILES

|                |         |           |
|----------------|---------|-----------|
| British Guiana | 89,480  | 306,844   |
| Chile          | 290,084 | 4,024,938 |
| Colombia       | 440,846 | 7,000,000 |
| Dutch Guiana   | 54,291  | 142,896   |
| Ecuador        | 109,978 | 2,000,000 |
| French Guiana  | 34,740  | 47,341    |
| Paraguay       | 171,814 | 829,969   |
| Peru           | 532,047 | 5,000,000 |
| Uruguay        | 72,153  | 1,696,000 |
| Venezuela      | 393,874 | 3,026,878 |

### EUROPE

|                |         |            |
|----------------|---------|------------|
| Albania        | 17,374  | 833,618    |
| Austria        | 32,369  | 6,534,481  |
| Belgium        | 11,755  | 7,932,077  |
| Bulgaria       | 39,814  | 5,483,125  |
| Czechoslovakia | 54,207  | 14,356,600 |
| Denmark        | 16,568  | 3,434,555  |
| England        | 50,874  | 35,681,019 |
| Estonia        | 18,362  | 1,117,270  |
| Finland        | 132,608 | 3,582,406  |

### AREA IN SQUARE MILES

|                  |           |             |
|------------------|-----------|-------------|
| France           | 212,659   | 40,960,000  |
| Germany          | 180,982   | 62,410,619  |
| Greece           | 49,912    | 6,204,684   |
| Hungary          | 35,875    | 8,525,725   |
| Iceland          | 39,709    | 103,317     |
| Irish Free State | 26,592    | 2,971,992   |
| Italy            | 119,710   | 40,796,000  |
| Latvia           | 24,440    | 1,883,189   |
| Lithuania        | 21,683    | 2,286,368   |
| Netherlands      | 13,320    | 7,625,938   |
| Northern Ireland | 5,994     | 1,248,000   |
| Norway           | 124,964   | 2,787,827   |
| Poland           | 149,958   | 30,213,000  |
| Portugal         | 35,490    | 6,032,991   |
| Rumania          | 122,282   | 17,393,149  |
| Scotland         | 30,405    | 4,882,497   |
| Soviet Russia    | 1,821,353 | 126,128,200 |
| Spain            | 190,050   | 21,338,381  |
| Sweden           | 173,154   | 6,087,923   |
| Switzerland      | 15,940    | 3,987,000   |
| Wales            | 7,466     | 2,205,680   |
| Yugoslavia       | 96,134    | 12,017,323  |





## AREA AND POPULATION LISTS

## AREA AND POPULATION OF STATES AND POSSESSIONS OF THE UNITED STATES

CENSUS OF 1930

|                         | SQ. MILES | POPULATION |                          | SQ. MILES | POPULATION |                              | SQ. MILES | POPULATION  |
|-------------------------|-----------|------------|--------------------------|-----------|------------|------------------------------|-----------|-------------|
| Alabama . . . . .       | 51,998    | 2,646,248  | Michigan . . . . .       | 57,980    | 4,842,325  | Tennessee . . . . .          | 42,022    | 2,616,556   |
| Arizona . . . . .       | 113,956   | 435,573    | Minnesota . . . . .      | 84,682    | 2,563,953  | Texas . . . . .              | 265,896   | 5,824,715   |
| Arkansas . . . . .      | 53,335    | 1,854,482  | Mississippi . . . . .    | 46,865    | 2,009,821  | Utah . . . . .               | 84,990    | 507,847     |
| California . . . . .    | 158,297   | 5,677,251  | Missouri . . . . .       | 69,420    | 3,629,367  | Vermont . . . . .            | 9,564     | 359,611     |
| Colorado . . . . .      | 103,948   | 1,035,791  | Montana . . . . .        | 146,997   | 537,606    | Virginia . . . . .           | 42,627    | 2,421,851   |
| Connecticut . . . . .   | 4,965     | 1,606,903  | Nebraska . . . . .       | 77,520    | 1,377,963  | Washington . . . . .         | 69,127    | 1,563,396   |
| Delaware . . . . .      | 2,370     | 238,380    | Nevada . . . . .         | 110,690   | 91,058     | West Virginia . . . . .      | 24,170    | 1,729,205   |
| District of Columbia    | 70        | 486,869    | New Hampshire . . . . .  | 9,341     | 465,293    | Wisconsin . . . . .          | 56,066    | 2,939,006   |
| Florida . . . . .       | 58,666    | 1,468,211  | New Jersey . . . . .     | 8,224     | 4,041,334  | Wyoming . . . . .            | 97,914    | 225,565     |
| Georgia . . . . .       | 59,265    | 2,908,506  | New Mexico . . . . .     | 122,634   | 423,317    |                              |           |             |
| Idaho . . . . .         | 83,888    | 445,032    | New York . . . . .       | 49,204    | 12,588,066 | POSSESSIONS                  |           |             |
| Illinois . . . . .      | 56,665    | 7,630,654  | North Carolina . . . . . | 52,426    | 3,170,276  | Alaska . . . . .             | 590,884   | 59,278      |
| Indiana . . . . .       | 36,354    | 3,238,503  | North Dakota . . . . .   | 70,837    | 680,845    | Guam . . . . .               | 210       | 18,509      |
| Iowa . . . . .          | 56,147    | 2,470,939  | Ohio . . . . .           | 41,040    | 6,646,697  | Hawaii . . . . .             | 6,449     | 368,336     |
| Kansas . . . . .        | 82,158    | 1,880,999  | Oklahoma . . . . .       | 70,057    | 2,396,040  | Panama Canal Zone            | 527       | 39,467      |
| Kentucky . . . . .      | 40,598    | 2,614,589  | Oregon . . . . .         | 96,699    | 953,786    | Philippine Islands . . . . . | 115,026   | 12,082,366* |
| Louisiana . . . . .     | 48,506    | 2,101,593  | Pennsylvania . . . . .   | 45,126    | 9,631,350  | Porto Rico . . . . .         | 3,435     | 1,543,913   |
| Maine . . . . .         | 33,040    | 797,423    | Rhode Island . . . . .   | 1,248     | 687,497    | American Samoa . . . . .     | 77        | 10,055      |
| Maryland . . . . .      | 12,327    | 1,631,526  | South Carolina . . . . . | 30,989    | 1,738,765  | Virgin Islands . . . . .     | 132       | 22,012      |
| Massachusetts . . . . . | 8,266     | 4,249,614  | South Dakota . . . . .   | 77,615    | 692,849    |                              |           |             |

\* 1929 estimate.

## CITIES IN THE UNITED STATES HAVING 30,000 OR MORE PEOPLE

CENSUS OF 1930

|                             |         |                                 |           |                              |         |                             |           |
|-----------------------------|---------|---------------------------------|-----------|------------------------------|---------|-----------------------------|-----------|
| Akron, O. . . . .           | 255,040 | Charleston, W. Va. . . . .      | 60,408    | Elkhart, Ind. . . . .        | 32,949  | Jamestown, N.Y. . . . .     | 45,155    |
| Alameda, Calif. . . . .     | 35,033  | Charlotte, N.C. . . . .         | 82,675    | Elmira, N.Y. . . . .         | 47,397  | Jersey City, N.J. . . . .   | 316,715   |
| Albany, N.Y. . . . .        | 127,412 | Chattanooga, Tenn. . . . .      | 119,798   | El Paso, Tex. . . . .        | 102,421 | Johnstown, Pa. . . . .      | 66,993    |
| Allentown, Pa. . . . .      | 92,563  | Chelsea, Mass. . . . .          | 45,816    | Erie, Pa. . . . .            | 115,967 | Joliet, Ill. . . . .        | 42,993    |
| Alton, Ill. . . . .         | 30,151  | Chester, Pa. . . . .            | 59,164    | Evanston, Ill. . . . .       | 63,338  | Joplin, Mo. . . . .         | 33,454    |
| Altoona, Pa. . . . .        | 82,054  | Chicago, Ill. . . . .           | 3,376,438 | Evansville, Ind. . . . .     | 102,249 | Kalamazoo, Mich. . . . .    | 54,786    |
| Amarillo, Tex. . . . .      | 43,132  | Chicopee, Mass. . . . .         | 43,930    | Everett, Mass. . . . .       | 48,424  | Kansas City, Kans. . . . .  | 121,857   |
| Amsterdam, N.Y. . . . .     | 34,817  | Cicero, Ill. . . . .            | 66,602    | Everett, Wash. . . . .       | 30,567  | Kansas City, Mo. . . . .    | 399,746   |
| Anderson, Ind. . . . .      | 39,804  | Cincinnati, O. . . . .          | 451,160   | Fall River, Mass. . . . .    | 115,274 | Kearny, N.J. . . . .        | 40,716    |
| Asheville, N.C. . . . .     | 50,193  | Cleveland, O. . . . .           | 900,429   | Fitchburg, Mass. . . . .     | 40,692  | Kenosha, Wis. . . . .       | 50,262    |
| Atlanta, Ga. . . . .        | 270,366 | Cleveland Heights, O. . . . .   | 50,945    | Flint, Mich. . . . .         | 156,492 | Knoxville, Tenn. . . . .    | 105,802   |
| Atlantic City, N.J. . . . . | 66,198  | Clifton, N.J. . . . .           | 46,875    | Fort Smith, Ark. . . . .     | 31,429  | Kokomo, Ind. . . . .        | 32,843    |
| Auburn, N.Y. . . . .        | 36,652  | Colorado Springs, Colo. . . . . | 33,237    | Fort Wayne, Ind. . . . .     | 114,946 | La Crosse, Wis. . . . .     | 39,614    |
| Augusta, Ga. . . . .        | 60,342  | Columbia, S.C. . . . .          | 51,581    | Fort Worth, Tex. . . . .     | 163,447 | Lakewood, O. . . . .        | 70,509    |
| Aurora, Ill. . . . .        | 46,589  | Columbus, Ga. . . . .           | 43,131    | Fresno, Calif. . . . .       | 52,513  | Lancaster, Pa. . . . .      | 59,949    |
| Austin, Tex. . . . .        | 53,120  | Columbus, O. . . . .            | 290,564   | Galveston, Tex. . . . .      | 52,938  | Lansing, Mich. . . . .      | 78,397    |
| Baltimore, Md. . . . .      | 804,874 | Council Bluffs, Ia. . . . .     | 42,048    | Gary, Ind. . . . .           | 100,426 | Laredo, Tex. . . . .        | 32,618    |
| Baton Rouge, La. . . . .    | 30,729  | Covington, Ky. . . . .          | 65,252    | Glendale, Calif. . . . .     | 62,736  | Lawrence, Mass. . . . .     | 85,068    |
| Battle Creek, Mich. . . . . | 43,573  | Cranston, R.I. . . . .          | 42,911    | Grand Rapids, Mich. . . . .  | 168,592 | Lewiston, Me. . . . .       | 34,948    |
| Bay City, Mich. . . . .     | 47,355  | Cumberland, Md. . . . .         | 37,747    | Green Bay, Wis. . . . .      | 37,415  | Lexington, Ky. . . . .      | 45,736    |
| Bayonne, N.J. . . . .       | 88,979  | Dallas, Tex. . . . .            | 260,475   | Greensboro, N.C. . . . .     | 53,569  | Lima, O. . . . .            | 42,287    |
| Beaumont, Tex. . . . .      | 57,732  | Danville, Ill. . . . .          | 36,765    | Hagerstown, Md. . . . .      | 30,861  | Lincoln, Nebr. . . . .      | 75,933    |
| Bellingham, Wash. . . . .   | 30,823  | Davenport, Ia. . . . .          | 60,751    | Hamilton, O. . . . .         | 52,176  | Little Rock, Ark. . . . .   | 81,679    |
| Berkeley, Calif. . . . .    | 82,109  | Dayton, O. . . . .              | 200,982   | Hammond, Ind. . . . .        | 64,560  | Long Beach, Calif. . . . .  | 142,032   |
| Berwyn, Ill. . . . .        | 47,027  | Dearborn, Mich. . . . .         | 50,358    | Hamtramck, Mich. . . . .     | 56,268  | Lorain, O. . . . .          | 44,512    |
| Bethlehem, Pa. . . . .      | 57,892  | Decatur, Ill. . . . .           | 57,510    | Harrisburg, Pa. . . . .      | 80,339  | Los Angeles, Calif. . . . . | 1,238,048 |
| Binghamton, N.Y. . . . .    | 76,662  | Denver, Colo. . . . .           | 287,861   | Hartford, Conn. . . . .      | 164,072 | Louisville, Ky. . . . .     | 307,745   |
| Birmingham, Ala. . . . .    | 259,678 | Des Moines, Ia. . . . .         | 142,559   | Haverhill, Mass. . . . .     | 48,710  | Lowell, Mass. . . . .       | 100,234   |
| Bloomfield, N.J. . . . .    | 38,077  | Detroit, Mich. . . . .          | 1,568,662 | Hazleton, Pa. . . . .        | 36,765  | Lynchburg, Va. . . . .      | 40,661    |
| Bloomington, Ill. . . . .   | 30,930  | Dubuque, Ia. . . . .            | 41,679    | Highland Park, Mich. . . . . | 52,959  | Lynn, Mass. . . . .         | 102,320   |
| Boston, Mass. . . . .       | 781,188 | Duluth, Minn. . . . .           | 101,463   | High Point, N.C. . . . .     | 36,745  | McKeesport, Pa. . . . .     | 54,632    |
| Bridgeport, Conn. . . . .   | 146,716 | Durham, N.C. . . . .            | 52,037    | Hoboken, N.J. . . . .        | 59,261  | Macon, Ga. . . . .          | 53,829    |
| Brockton, Mass. . . . .     | 63,797  | East Chicago, Ind. . . . .      | 54,784    | Holyoke, Mass. . . . .       | 56,537  | Madison, Wis. . . . .       | 57,899    |
| Buffalo, N.Y. . . . .       | 573,076 | East Cleveland, O. . . . .      | 39,667    | Houston, Tex. . . . .        | 292,352 | Malden, Mass. . . . .       | 58,036    |
| Butte, Mont. . . . .        | 39,532  | Easton, Pa. . . . .             | 34,468    | Huntington, W. Va. . . . .   | 75,572  | Manchester, N.H. . . . .    | 76,834    |
| Cambridge, Mass. . . . .    | 113,643 | East Orange, N.J. . . . .       | 68,020    | Indianapolis, Ind. . . . .   | 364,161 | Mansfield, O. . . . .       | 33,525    |
| Camden, N.J. . . . .        | 118,700 | East St. Louis, Ill. . . . .    | 74,347    | Irvington, N.J. . . . .      | 56,733  | Marion, O. . . . .          | 31,084    |
| Canton, O. . . . .          | 104,906 | Elgin, Ill. . . . .             | 35,929    | Jackson, Mich. . . . .       | 55,187  | Medford, Mass. . . . .      | 59,714    |
| Cedar Rapids, Ia. . . . .   | 56,097  | Elizabeth, N.J. . . . .         | 114,589   | Jackson, Miss. . . . .       | 48,282  | Memphis, Tenn. . . . .      | 253,143   |
| Charleston, S.C. . . . .    | 62,265  |                                 |           | Jacksonville, Fla. . . . .   | 129,549 | Meriden, Conn. . . . .      | 38,481    |



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## POPULATION OF LARGEST CITIES IN OTHER COUNTRIES OF THE AMERICAS

|                  |         |
|------------------|---------|
| Caracas . . . .  | 135,253 |
| Maracaibo . . .  | 74,767  |
| Valencia . . . . | 37,000  |

|                  |         |
|------------------|---------|
| Barranquilla . . | 81,500  |
| Bogotá . . . .   | 166,167 |









A map of the world showing ocean currents.

## A LIST OF BOOKS FOR OUTSIDE READING

- ALLEN, NELLIE B. North America. Ginn and Company.  
 ALLEN, NELLIE B. South America. Ginn and Company.  
 ALLEN, NELLIE B. The United States. Ginn and Company.  
 BABSON, ROGER W. A Central American Journey. World Book Company.  
 BEALBY, J. T., and FAIRFORD, LORD. Canada and Newfoundland. The Macmillan Company.  
 BOWMAN, ISAAH. South America. Rand McNally & Company.  
 CARPENTER, FRANK G. How the World is Clothed. American Book Company.  
 CARPENTER, FRANK G. How the World is Fed. American Book Company.  
 CARPENTER, FRANK G. How the World is Housed. American Book Company.  
 CARPENTER, FRANK G. North America. American Book Company.  
 CARPENTER, FRANK G. South America. American Book Company.  
 CHAMBERLAIN, JAMES F. and ARTHUR H. North America. The Macmillan Company.  
 CHAMBERLAIN, JAMES F., and ARTHUR H. South America. The Macmillan Company.  
 CRISSEY, FORREST. The Story of Foods. Rand McNally & Company.  
 DAKIN, WILSON S. Great Rivers of the World. The Macmillan Company.  
 DORRANCE, JOHN G. The Story of the Forest. American Book Company.  
 FAIRGRIEVE, JAMES, and YOUNG, ERNEST. The United States. D. Appleton and Company.  
 GEORGE, MARIAN M. A Little Journey to Mexico and Central America. A. Flanagan Company.  
 GEORGE, MARIAN M. Little Journeys to Alaska and Canada. A. Flanagan Company.  
 GEORGE, MARIAN M. Little Journeys to Hawaii and the Philippine Islands. A. Flanagan Company.  
 GILMAN, ISABEL A. Alaska: the American Northland. World Book Company.  
 HERBERTSON, A. J. and F. D. Central and South America. The Macmillan Company.  
 KOCH, FELIX J. A Little Journey to our Western Wonderland. A. Flanagan Company.  
 KOCH, FELIX J. Through the Great Southwest. A. Flanagan Company.  
 LEFFERTS, WALTER. Neighbors North and South. J. B. Lippincott Company.  
 LEFFERTS, WALTER. Our Own United States. J. B. Lippincott Company.  
 ROCHELEAU, W. F. Great American Industries Series. A. Flanagan Company.  
 SCHWATKA, FREDERICK. Children of the Cold. Educational Publishing Company.  
 SOUTHWORTH, G., and KRAMER, S. E. Great Cities of the United States. Iroquois Publishing Co., Inc.  
 STEFANSSON, V., and SCHWARTZ, J. A. Northward Ho! The Macmillan Company.  
 TAPPAN, EVA MARCH. Diggers in the Earth. Houghton Mifflin Company.  
 TAPPAN, EVA MARCH. The Farmer and his Friends. Houghton Mifflin Company.  
 TAPPAN, EVA MARCH. Makers of Many Things. Houghton Mifflin Company.  
 TAPPAN, EVA MARCH. Travelers and Traveling. Houghton Mifflin Company.  
 WINSLOW, I. O. Our American Neighbors. D. C. Heath & Co.



# INDEX AND PRONOUNCING WORD LIST

KEY. ā as in āle; ǎ as in ǎm; â as in senâte; â as in câre; â as in âsk; â as in ârm; ǎ as in ǎccount; â as in sofâ; ē as in ēve; ē as in ēnd; ē as in ēvent; ē as in makē; ē as in recēnt; î as in ice; î as in ill; ô as in ôld; ô as in ôdd; ô as in ôbey; ô as in ôrb; ô as in sôft; ô as in cōnnect; û as in ûse; û as in ûp; û as in ûnite; û as in ûrn; ǎ as in circǎs; ǎ as in fôod; ǎ as in fôot; oi as in oil; ŋ as in inŋ; N as in boN; th as in then; ' as in evil (ē'v'l)

NOTE. Map references are given thus: 161, F4. The number in italic type, 161, = the map page; F4 = the letter and number on the margins of the map. The F refers to the area between two meridians of longitude, and the 4 refers to the area between two parallels of latitude. The letter and the figure are to be used as guides in locating the place

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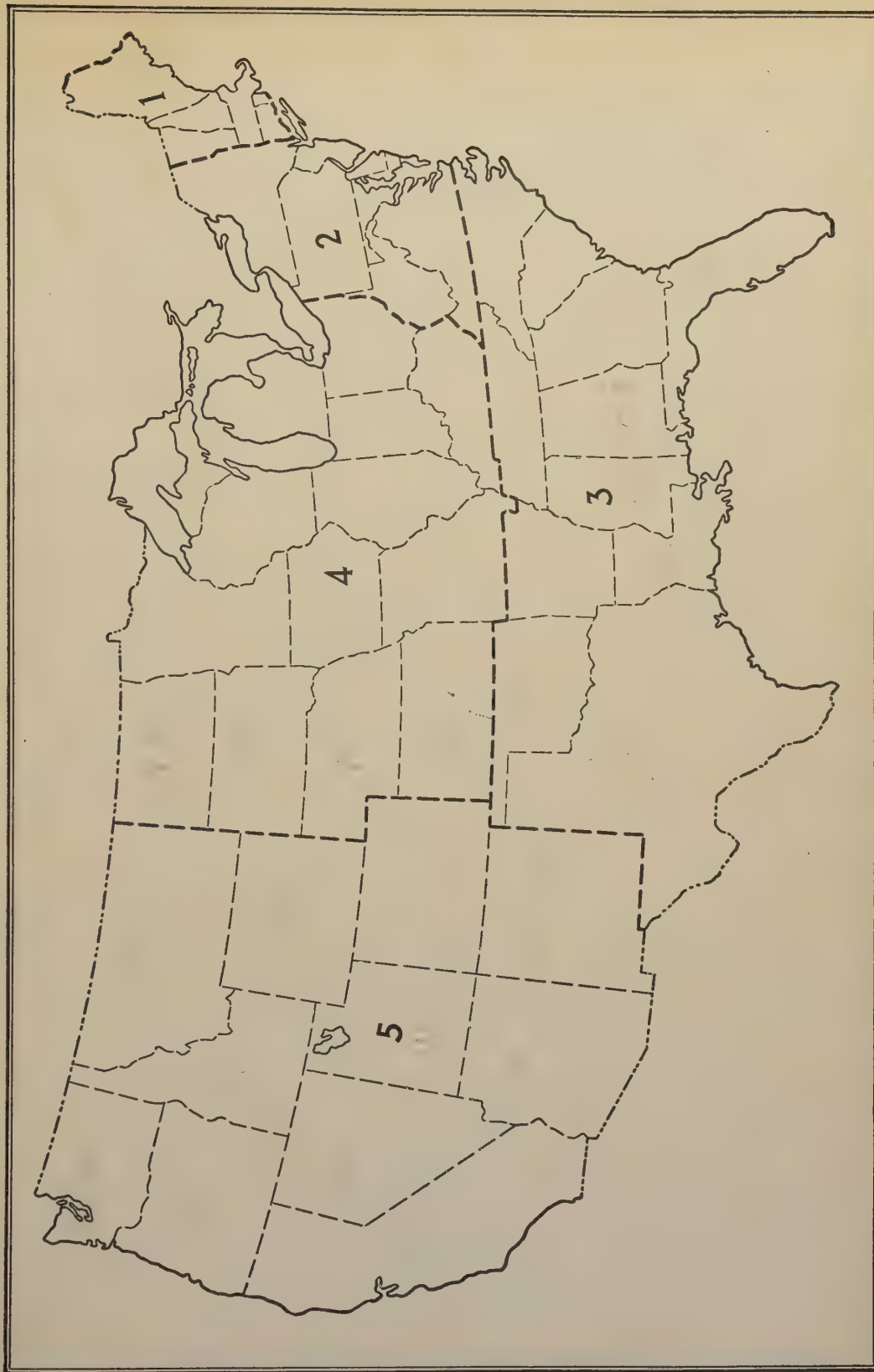
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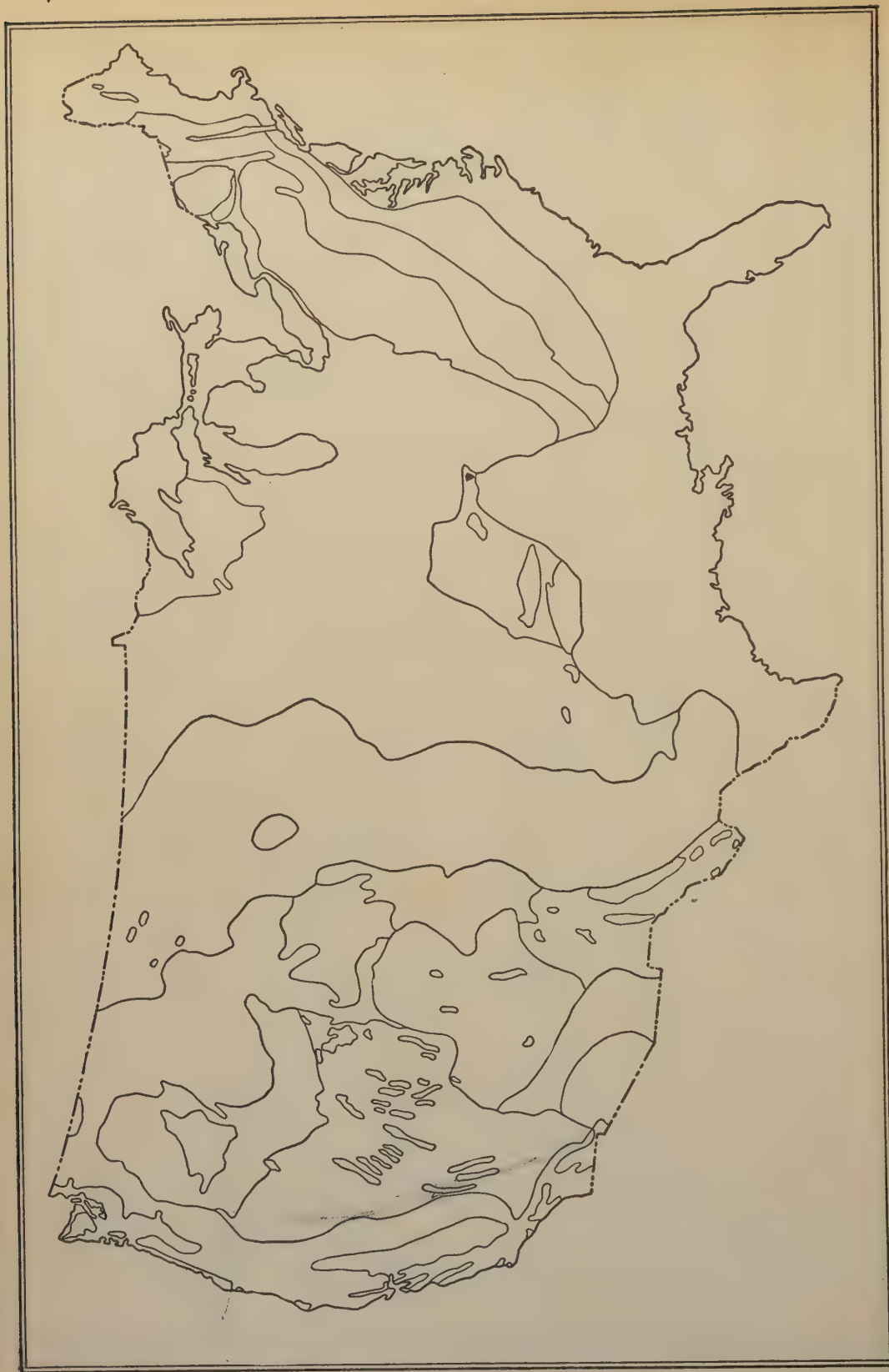
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Outline map of the states of the United States.

Groups of states: 1, New England States; 2, Middle Atlantic States; 3, Southern States; 4, Central States; 5, Western States.



Outline map of the natural regions of the United States.









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